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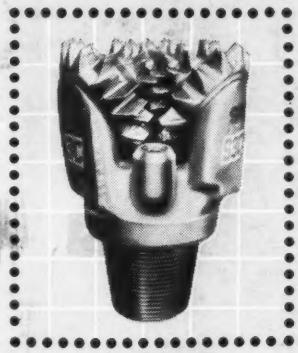
No. 23



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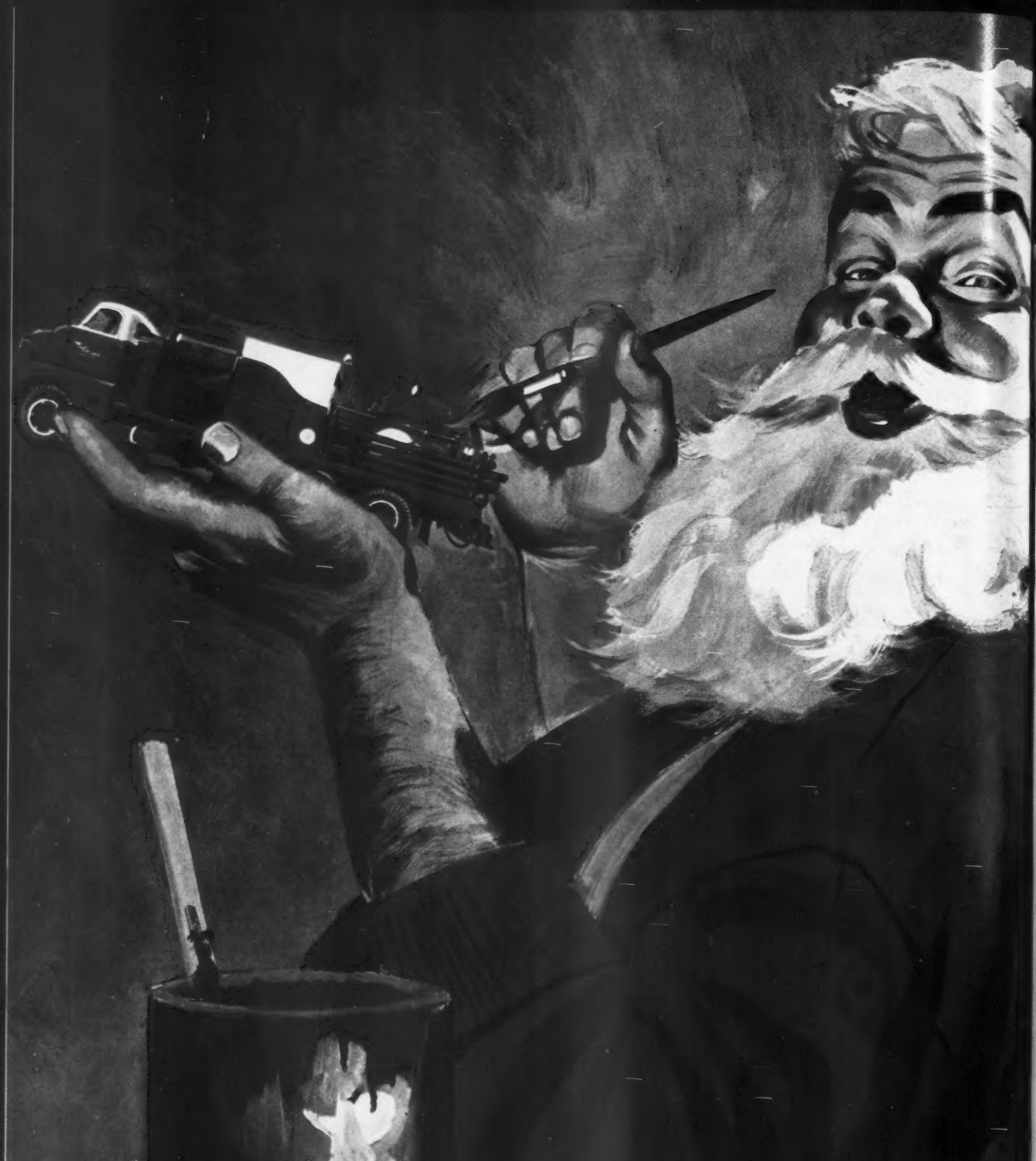

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CALIFORNIA
OIL WORLD

PUBLISHED TWICE A MONTH

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LOS ANGELES 57, CALIFORNIA

PETROLEUM PUBLISHERS, INC.
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342 Madison Avenue, New York 17, N. Y.

• FIRST ISSUE
DECEMBER, 1957
VOL. 50 • NO. 23
WHOLE NO. 1981

California Oil World is published twice a month at 2404 West 7th St., Los Angeles 57, California. Entered as Second-Class Matter, April 29th, 1944, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price $1 per year in U. S. and possessions, $2 in foreign countries including Canada.

Telephone DUnkirk 2-6218
December 15th, 1957

Shell Oil Company Big Factor In The Four Corners Steady Prosperity Growth

Nothing but success appears to attend Shell Oil's field campaign at the Four Corners, an area which numbered the company as one of its farsighted pioneers and where production chances look more and more inviting as time goes along.

Shell's production division at Farmington, New Mexico, has recently scored with excellent producing wells, which are due to augment oil supplies marked for transportation through the Four Corners pipeline to the Los Angeles refinery district.

Carson Unit No. 21-23, Carson Unit No. 34-17, Government No. 14-16A and Government No. 24-16A were completed in the Bisti field, San Juan County, New Mexico. North Desert Creek No. 22-13 and North Desert Creek No. 33-12 clicked in the North Desert Creek field, San Juan County, Utah. These six wells represent a daily output of approximately 7000 barrels of oil a day.

Completion Data

Carson Unit No. 21-13 started off at the rate of 322 barrels of oil and 147,000 cubic feet of gas a day from a total depth of 4980 feet. Drilled to a bottom of 5032 feet, Carson Unit No. 34-17 was finaled for 655 barrels daily. Government No. 14-16A and No. 24-16A, respectively, came in from a total depth of 5085 feet and a comparable level in the Gallup sand for 744 and 879 barrels every 24 hours.

Often there was no short interlude between the time these wells reached bottom and casing run before final tests were initiated.

Shell has called attention to the fact that in the Bisti field it is normal practice to drill wells to total depth, cement casing and then release the drilling rig. Subsequent operational move is the bringing in of a servicing unit at a later and more convenient time for adding the final touches to the wells.

Whopping Wells

At North Desert Creek, Shell accounted for a brace of the highest producing wells ever completed in the Four Corners territory.

North Desert Creek No. 22-13 was taken to a bottom of 5555 feet and flowed initially from two producing intervals in the Paradox formation at the daily rate of 2124 barrels of oil and 1,700,000 cubic feet of gas. North Desert Creek No. 33-12 put on a like stellar performance by coming in from the interval of 5367-5545 feet for 2088 barrels of oil and 2,460,000 cubic feet of gas a day.

Shell's drilling program next year in The Four Corners region is expected to be intensified and to include a more generous proportion of wildcats in a definite quest for additional discoveries to augment reserves in the fastest-growing market in the nation.

Pipeline Favored

At the recent meeting of the Independent Producers and Royalty Owners Association of New Mexico at Albuquerque considerable discussion was centered on possibilities of a new crude oil pipeline from West Texas and New Mexico to the Pacific Coast.

Jerry O'Brien, president of a Texas group of independent oil men and royalty owners, in a speech at the Albuquerque meeting, urged the construction of a West Texas-Pacific Coast line, which would originate at Wink, Texas, and cross portions of New Mexico and Arizona in finally delivering oil to the Pacific Coast.

Meantime, crude oil produced in fields in both New Mexico and Utah is now finding its way into the Four Corners pipeline. The line will not be completed until February of next year, but it was necessary to start oil flowing to the line now as it will take 1,020,000 barrels of crude oil to fill gathering lines, the trunk line and working storage.

Line Fill

R. G. McIntyre of Houston, Four Corners Pipe Line Company president, said line fill will be continued on a periodic basis as oil is needed to displace water in testing each completed section of the line.

The 750-mile line is nearly completed from Southern Utah to the Arizona-California state lines. Work is also in progress in certain California sections.

An overhead crossing of the Little Colorado River at Cameron, Arizona, lacks nothing, and the underwater crossing of the Colorado not far from Needles, California, is at the finishing stage.

Shell Pipe Line Corporation is building and will operate the line as agents for its owners. Ownership is held by Shell Oil Company, Superior Oil Company, Continental Pipe Line Company, Gulf Oil Corporation, Richfield Oil Corporation and Standard Oil Company of California.

In addition to Shell, other com-

(Continued on Page 10)

Field Development

Shell Development's Modesto Office Unified

Shell Development Company's agricultural research division has been consolidated into one location at Modesto. A number of new laboratory, service and office buildings have been put up to accommodate personnel transferring to the California city from the company's research laboratory in Denver. The amalgamation brings together the biological research and experimental farm of Modesto and the physical sciences, synthesis and administration from Denver.

Western Gulf Oil Leasing At Watts

Western Gulf Oil Company has reached the winding up stage with its townlot leasing campaign northwest of Watts for several miles and east of Alameda boulevard. Signatures are being acquired by Marin I. Smith as representative of Western Gulf, with headquarters at 1021 south Central avenue in Los Angeles. The subsurface oil and gas leases being offered call for one-sixth royalty. Leases also call for the first payment due under the leases at the time of signature on the basis of $90 per acre for the first two years. The minimum initial payment to be made will be $10 to any property owners.

Half Moon Bay Wildcat Abandoned

Following electric log run to bottom at 2500 feet, Cann & Wallis has pulled out of its Elkus No. 1 wildcat well on Section 15-6s-5w in the Half Moon Bay area in San Mateo County.

Cuyama Valley Wildcat Working

One mile south of the Russell Ranch sector in Cuyama Valley, Eames Oil Company of Oakview is under way with Smith No. 2 wildcat on Section 17-10n-27w, Santa Barbara County. The project shapes up as an 8000-foot test.

San Ardo Test Keeps Drilling

The Texas Company's Aurignac (NCT-1) No. 30 wildcat on Section 33-22s-10e and west of the San Ardo field in Monterey County is drilling toward scheduled objective depth of 6000 feet. Texaco has added a new gasser with its Georgiana Unit Two. No. 2 on Section 3-4n-4e in the Georgianna area, Sacramento County. The well flowed initially at the daily rate of 1,300,000 cubic feet of gas through a 12/64-inch bean from a plugged depth of 4122 feet in the Midland sand of the Lower Eocene formation.

Monroe Swell Test Interesting

Three years ago The Texas Company wildcatted in the Monroe Swell area in Monterey County without much success. However, the area is intriguing enough as Shell Oil Company is now exploring the area. Shell's work is represented by its Shell-Texas-Beedy No. 1 on Section 1-20s-6e or about seven miles northwest of King City and three miles southwest of The Texas Company's Beedy No. 1. The latter was finaled in 1949 pumping 76 barrels of eight gravity oil a day, cutting close to 50 per cent. The well, Monroe Swell's only producer to date, failed to endure for many months and it was eventually abandoned. What oil it produced was found in a Miocene interval from 2221 to 2436 feet.

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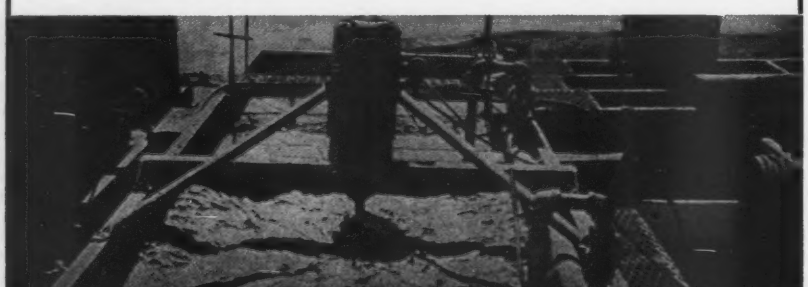

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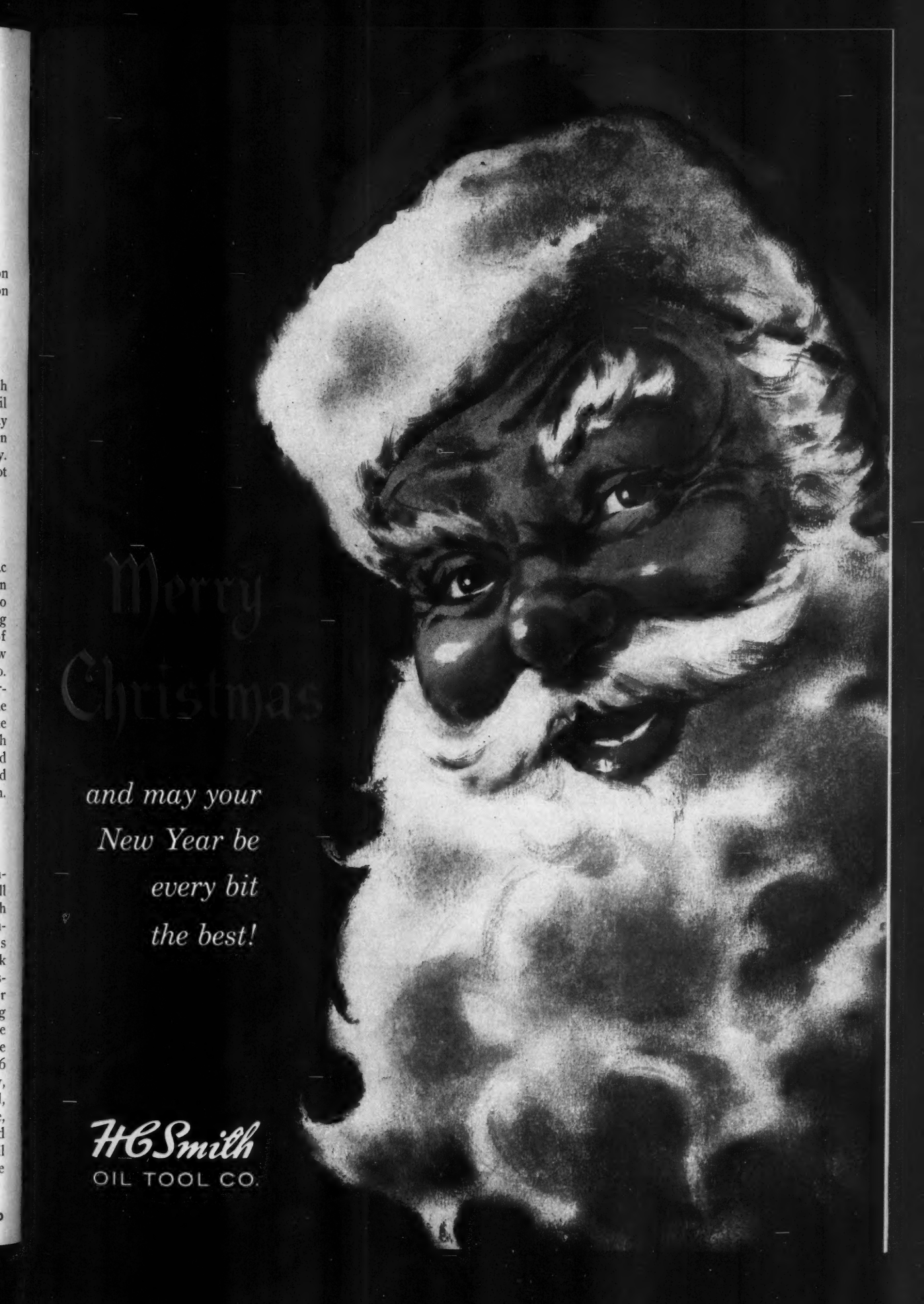
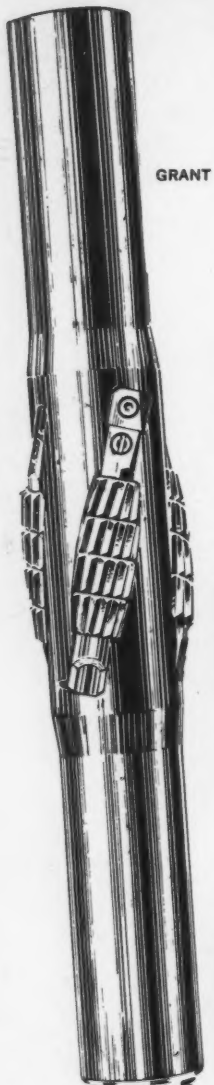
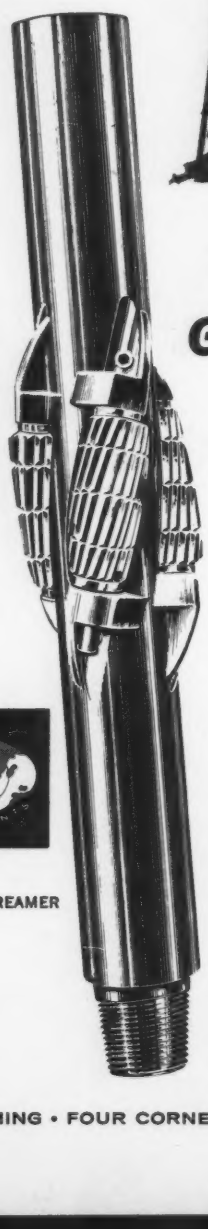

Merry Christmas
and may your New Year be every bit the best!
H.C. Smith
OIL TOOL CO.



GRANT MODEL 1530 REAMER



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Texaco Building Nears Completion

The Texas Company's headquarters building at Wilshire Boulevard and Catalina street in Los Angeles will be ready for occupancy shortly after the turn of the year. Reinforced concrete covers the end of the 12-story T-shaped building, and a "curtain wall" of aluminum sash and porcelain enamel panels inclose the remainder. Wide glass areas have been engineered for sun control and air conditioning efficiency.

Bakersfield Civic Group In Oil Study

The Greater Bakersfield Chamber of Commerce has embarked on a study of oil centers in the United States. Walter L. Rowse, chairman of a special petroleum committee has assigned Dave McAlpine, a member of the unit, to work out the survey, which will include a comprehensive report on all types of projects supported by chambers in 25 oil producing regions of the country.

Edgemont Oil Company Formed

B. J. Stansbury Inc., Milton J. Stansbury, Watson Barnett and Watson Mackessey have organized the Edgemont Oil Company in Bakersfield as a general partnership.

Arizona Mines Bureau Distributes New Map

The Arizona Bureau of Mines, University of Arizona, Tucson, is distributing a new geologic map of Maricopa County, Arizona. The map, the first of several to eventually delineate the state's 14 counties, charts the rock types and fractional topography of the county. Scaled six miles to one inch, copies of the map may be purchased from the Arizona Bureau of Mines. Price is 75 cents a copy.

Two California Oil Companies Join Group

Douglas Oil Company of California, Los Angeles; and Edgington Oil Refineries, Inc., Long Beach, are new members of the Asphalt Institute. They were formally received into the group when the board of directors of the institute held their annual two-day meeting, December 4-5, at the New York Athletic Club.

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General Adds Cahone Mesa Discovery Well

General Petroleum Corporation's wildcat test on Section 16-40s-25e in San Juan County, New Mexico, is in for a current yield of 80 barrels a day from 6139-6150 feet in the Paradox formation. The well apparently found new oil a little less than two miles north of the Cahone Mesa field.

North Riverdale Wildcat Written Off

Era Gill & Associates has relegated to history its Hope-Moultrie No. 1 wildcat venture on Section 3-17s-19e at North Riverdale in Fresno County. Electric log to bottom at 6500 feet was the final operational move with the well.

West Bellevue Well Flowing

F. M. Taylor, Operaor, has completed No. 82-32 West Bellevue extension test on Section 32-29s-26e in Kern County. The well started off from a total depth of 8051 feet at the daily rate of 300 barrels from the Clark zone sand in the Upper Stevens formation through a restrictive 12/64-inch bean. Green & Dreblow put the well down. Engineering was handled by Hal Strickler.

Cascade Wildcat Ready To Drill

General Petroleum Corporation is all set to drill an interesting wildcat test to approximately 15,000 feet in the Cascade area in Los Angeles County. Located on a farmout from Macson Oil Company on Section 25-3n-16w, the well is designated Macson-Mission No. 1.

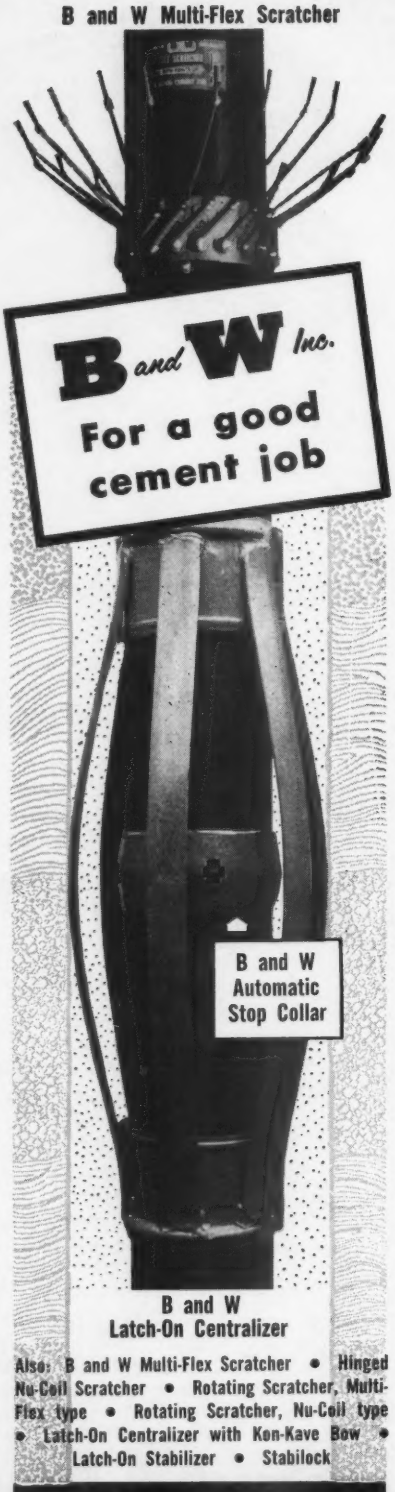
Beacon Anticline Venture Fades Out

The Texas Company's Newhall D No. 2 wildcat test on Section 12-4n-17w in the Beacon area of Los Angeles County has been abandoned at a redrilled depth of 12,064 feet. The well was taken the first time to 11,946 feet and the redrilling instituted largely in an effort to sidetrack fish.

Torrance Well Locations Made

New drilling jobs mapped out for the Torrance field include O. M. Slosson's Torrance No. 6 at Sepulveda boulevard and Western avenue, and C. A. P. Drilling Company, Inc., Day No. 1 at Henrietta and Emerald streets.

B and W Multi-Flex Scratcher



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Doheny Leases Bowerbank Land

Patrick A. Doheny of Beverly Hills has leased more than 300 acres of land in wildcat territory and no great distance from the Bowerbank gas field at Buttonwillow in Kern County. The property was acquired from the Southern Pacific Company, owner of the land on which the Bowerbank field was discovered some 15 years ago. Doheny's lease, on the north half of Section 19-29s-25e, is two miles east of the Bowerbank field.

Midway-Sunset Deep Well Drilling Ahead

Back of Taft on historic old 25 Hill, Standard Oil of California has spudded-in and is drilling ahead with its deeper pool test designated as No. 46-25C and located on Section 25-32s-23e at Midway-Sunset. William M. Keck Jr. has abandoned CWOD No. 1-21 on Section 21-31s-22e in the Midway-Sunset area at an unproductive 6509 feet.

Vallecitos Test Finally Given Up

Artnell Oil & Gas Company, which resumed operations late in November with its Ashurst No. 3-5 wildcat at Vallecitos in San Benito County, has reabandoned the project at 6508 feet. After cleaning out on resumption of operations the hole was lost.

Tulare County Wildcat Quits

E. B. Houghton, Operator, St. Nicholas Gould No. 1 wildcat test on Section 8-24s-28e at Tulare County's Ducor area has been officially abandoned at 653 feet. Drilling was suspended last September.

Rincon Wildcat All Set To Drill

Union Oil Company is ready to take down its 12,000-foot wildcat project on Section 8-3n-24w at Rincon in Ventura County. The well is tagged Standard-Hobson No. 1.

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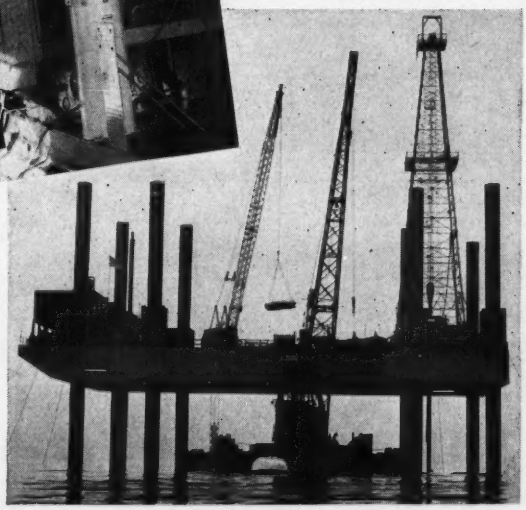

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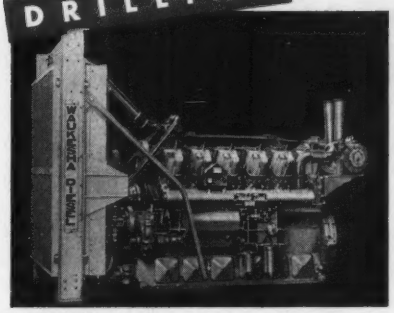

VLRDBSU Turbocharged Diesel Unit—twelve cyl., 8½-in. bore x 8½-in. stroke, 5788 cu. in. displacement, 1190 hp at 1200 rpm.

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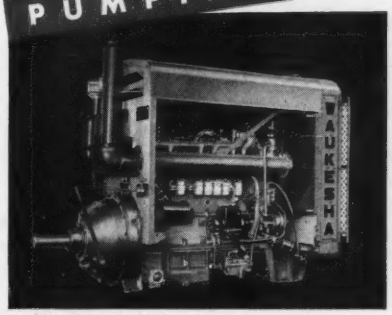
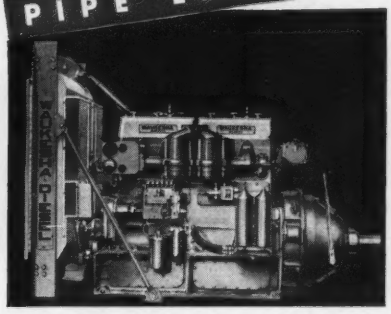


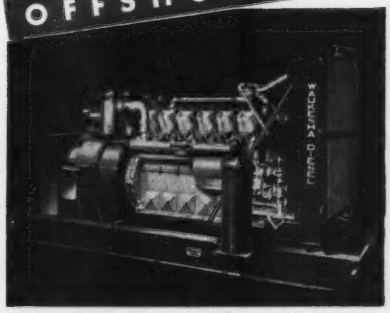
WAKU Special Long Life Unit—six cyl., 6¼-in. bore x 6½-in. stroke, 1197 cu. in., 125 continuous (65%) hp at 1200 rpm.

PIPE LINE



NKDBU Normal Diesel Power Unit—six cyl., 7-in. bore x 8¼-in. stroke, 1905 cu. in., 270 hp at 1200 rpm, (to 360 hp turbocharged).

OFFSHORE



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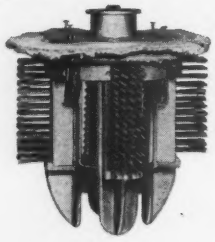

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Reserve Drilling Oxnard Plains Well

Reserve Oil and Gas Company is moving ahead at an early stage with its Duntley No. 3 well on Section 2-1n-22w in the Oxnard Plains area in Ventura County. Reserve's 85-acre Duntley lease is already the scene of two wells each producing about 300 barrels of crude oil a day. The property is situated due east of the town of Oxnard. Target of the current well, as was of the predecessors, is the same formation near 65 feet.

Orland Buttes Wildcat Working

Humble Oil & Refining Company is under way with its Ernest M. Michael No. 1 wildcat project on Section 33-22n-4w in the Orland Buttes area in Glenn County. Drill site is about 62 miles north of Humble's deep test at Rumsey Hills. The present test will be taken to something like 11,500 feet. At Pine Creek Tehama County, the company's Calvin C. Baccala No. 1 project on Section 23-24n-13w is being drilled steadily on down near 3500 feet.

Redondo Field Wells Slated

Henry French and W. E. (Steve) Dunlap are understood to have programmed a couple of two new drilling jobs in the Redondo field. They will be put down on the Zenith lease.

South Paloma Well Drilling

Superior Oil Company is drilling near 3000 feet with its first followup Job, KCL No. 74-10, is its discovery well at South Paloma in Kern County. Location on Section 10-32s-26e shapes up as a northwest offset to the company's KCI No. 85-10, which was finaled in October for 240 barrels of 56.1 gravity oil a day through a 12/64-inch choke from 10,020-10,050 feet. The find was made approximately a half-mile from the main Paloma field.

North Helm Test 7615-Foot Duster

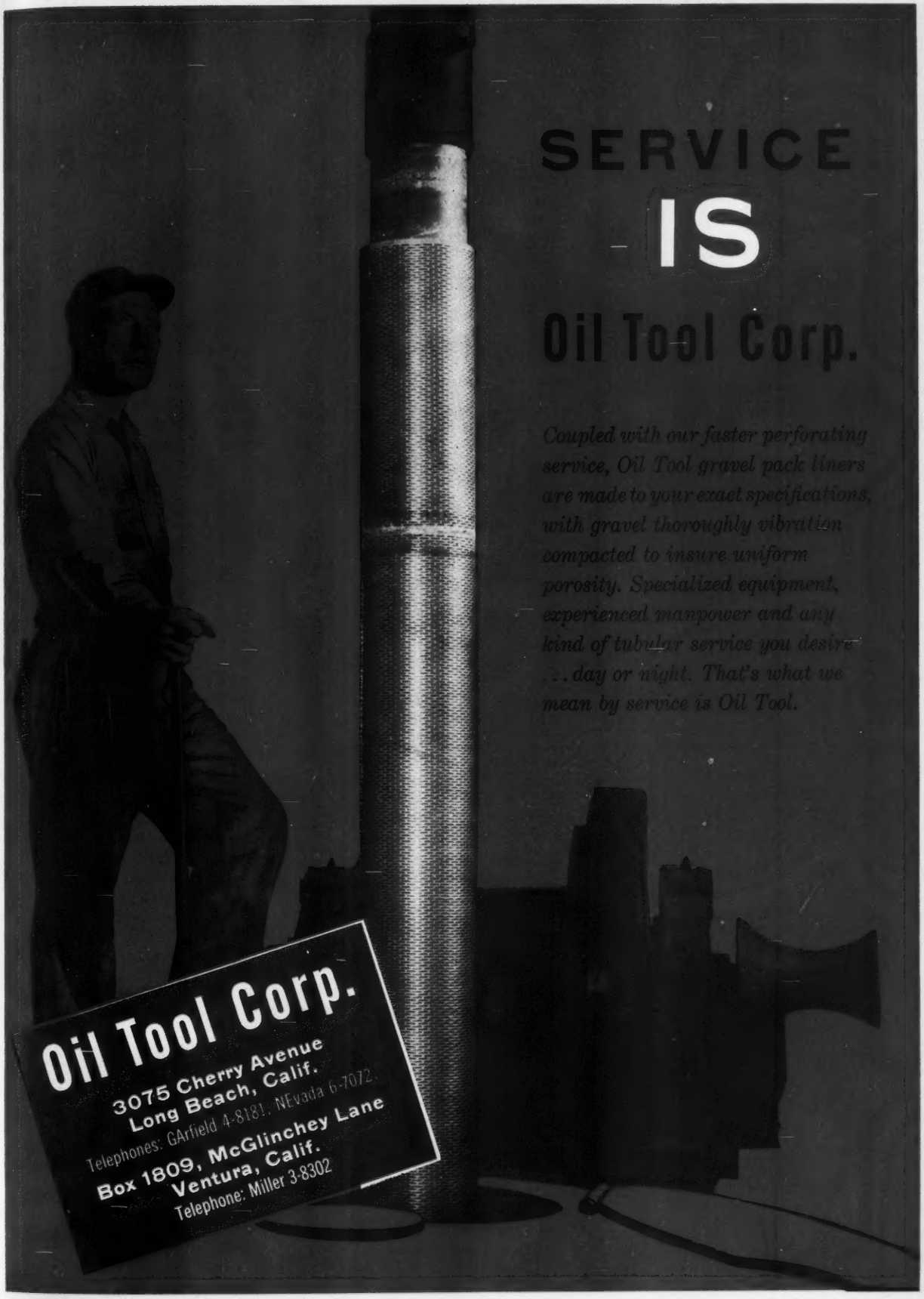
Golden Bear Oil Company and Trigood Oil Company's Kiuttu No. 16X-3 wildcat project on Section 3-16s-17e in Fresno County has been abandoned at 7615 feet. Location fell three and one-half miles north of the Helm field and two miles southeast of the San Joaquin field.

La Honda Project Production Failure

On Section 16-7s-4w at La Honda in San Mateo County, Neaves Petroleum Developments has walked away from its NUOL No. 6 extension test, which falied to show anything of interest to 3434 feet.

Washington Tests Reperfs

Sunshine Mining Company has gone back to the first commercial producing well in Washington to reperforate additional intervals at 4060-4065 feet, 4070-4076 feet and 4085-4091 feet. The well, Medina No. 1, was completed last August at 3952-3958 feet in the Nye zone in the Lower Miocene formation. Initial yield was 176 barrels a day. The newly perforated intervals are also in the Nye zone. Medina No. 2, a followup to the discovery, is suspended for a time after flowing oil on tests of the Ocean City zone from 3016 to 3036 feet. Sunshine Mining has under consideration a series of three more drilling jobs in the area.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Gosford Well Moving Steadily

Continuing its lucrative development in the Gosford area of Kern County, Universal Consolidated Oil Company is drilling under 3000 feet with its Statex KCL No. 12-19 on Section 19-30s-27e. The company the other week completed its second well, Statex-KCL No. 23-19, at 9904 feet for 334 barrels of clean oil a day through a 12/64-inch bean. Intervals opened in the Lower Stevens were at 8502-8510 feet, 9728-9732 feet, 9746-9748 feet and 9765-9784 feet. The well is a northeast offset job to the discovery well completed by Universal Consolidated in the Lower Stevens formation at location about one-half mile east of the Gosford field. Statex-KCL No. 12-19 lies 990 feet south and 330 feet east from the northwest corner of Section 19. It offset the new producer to the northwest. Drilling chores at Gosford are in the hands of Casey & Montgomery.

Brown Drilling Arbuckle Tests

Brown Drilling Company of Long Beach is contractor on two interesting test wells in motion in the Arbuckle area of Colusa County. They are Signal Oil & Gas Company's Signal-Mathews No. 1 on Section 33-14n-2w, and Western Gulf Oil Company's A. S. Wiggins No. 2 on the same section.

Tejon Extension Tests Planned

British American Oil Producing Company will take down a northerly and an easterly offset to Texaco's Tejon Ranch B No. 2 discovery well, completed six weeks ago for 165 barrels of 20.9 gravity oil a day from 5370-5423 feet. British American's Tejon No. 1 and 2 will be drilled on Section 5-10n-19w.

Apache County Play Programmed

Fred Blair Townsend, Phoenix attorney, and Mrs. Townsend, have mapped out an interesting exploration play on the Zuni structure, northeast of St. Johns in Apache County, Arizona. The Townsends, who control approximately 23,000 acres in Township 15 north and Range 29 east, have programmed three tests to thoroughly evaluate the delineated structure. The Townsends share interest in the play with a number of Texas associates and the Harrison Producing Company. The latter organization has brought in a drilling rig from another state to get going with the first well.

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OIL FIELD PUMPING UNITS

Kriss Kringle iss Loaded

'Twas a fortnit to Christmas
When all thru the shoppe
Dere was poundin und paintin
Und workin und schtuff.

Das orders keep kumin und looks like ders more
To machen das gears* what turnin das wheels
In refinerundkraken dose automs und gunk.

Das gears* kutten gut mit finish und polish
Reflektin mit sharpness das schmilin und grinnin of fokes who are allatime buyin
Und yuse in all kinds of werkes
Like schteel fabrikaten, und potash and borax
Where der juis they produce
Wich fire up der rockets
Mit schkwirten und schpitten und pusch.

Mit werken und schwettin
Der bunch takes der pig iron
Und mit fond Luffinkare
They squeeze und they pusch unt suddenly—Pfft
It's a Herringbone-Sykes precision-made gear*.

Kriss Kringle mit glee und gut cheer in his heart Iss loaded (mit goods)
Und he's got gears* for der mills, und gears for der wells,
Und gears for gut guys all over der werld.

So mit schnappin und kraken, der whip iss sure werken,
Kriss Kringle he spraken ze Deutsch so loud und so strong,
"Now Dasher, now Dancer, Prancer and Vixen,
On Comet, on Cupid, Donner und Blitzen,
To the top of the walls."
And we heard him exclaim
As he drove out of sight
"Merry Christmas to All
And to All a Good Night!"

*** Lufkin Gears, natch!**

Lufkin FOUNDRY & MACHINE COMPANY

Shell at Four Corners

(Continued from Page 1)

panies active one way or another here and there in the Four Corners region, include The Texas Company, Standard Oil of California, Superior Oil Company, Sun Oil Company, Tennessee Gas Transmission Company, Carter Oil Company, Sinclair Oil & Gas Company, Phillips Petroleum Company and British American Oil Producing Company.

Also El Paso Natural Gas Company, Davis Oil Company, San Jacinto Petroleum Company, Havenstrite Oil Company, General Petroleum Corporation, Gulf Oil Corporation, Ohio Oil Company and many others.

The greater majority of both the large and small operating organizations in California are represented by some type of interest in the Four Corners expanding development and 1958 probably will record a tremendous surge of new drilling where the borders of Utah, New Mexico, Colorado and Arizona touch one another.

After the ceremony, the minister went to the home of the bride for the reception and upon being told that milk punch was being served, accepted his portion, drank it with satisfaction, and observed: "My! my! what a cow!"

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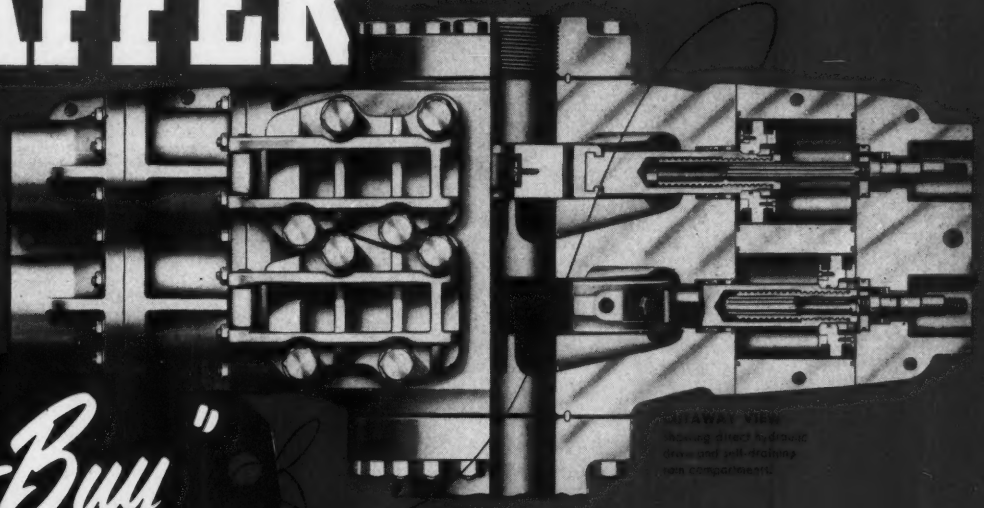

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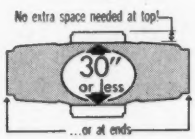
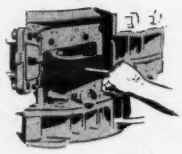


Even in sizes as large as 13⅝" (12" Series 900) Shaffer Hydraulic *Double* Gates (*two* ram compartments unitized into *one* compact body) require only 30" total height.

Width and length dimensions are also unusually compact... and no extra space is needed at the ends and top for ram changes!

They're CONVENIENT



Rams are changed through patented side-opening doors. And closing the doors automatically aligns the rams within the Gate. There's no need to dismantle the Gate to change rams—nor need extra space be provided above the Gate or at the ends in order to make ram changes!

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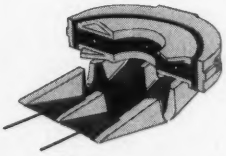

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Petroleum LORE and LINGO

By Richard Sneddon

New Style Searchers

The expansion of geoscientific effort did not end with the entry of the seismologist into the exploration scheme. An interesting addition that first came to my notice about 1934 was the petromicropaleoichthyologist, already mentioned. So far as I know the original practitioner of this strange species of subsurface analysis, at least for oil finding purposes, was a young lady who ducked out of Germany during the Hitler heyday and eventually found her way to the United States. In Europe she had established a considerable reputation as an ichthyologist and, indeed, had completed a classification of the fish fauna of the Belgian Congo for the Belgian government.

Fossil Fish

The Greek name for fish is ichthyos, hence the main part of this specialist's elongated title. Paleios, as we learned earlier in this dissertation, means "ancient" and particularly the ancient history that is wrapped up in the fossil remains of animals and plants. We are already familiar with the derivation of petro-, micro-, and -ology, so the big word no longer has any terrors. Continuing the narrative: Under the direction of the late Dr. Chester Stock of California Institute of Technology in Pasadena, the lady ichthyologist began a study of the relationship between fish fossils and the sedimentary layers in which they are found. Since the pertinent sediments are of marine origin she concentrated on salt water fish, and since the scales of every species have their own identifying peculiarities, she confined her attention to these members.

Scales are Revealing

In the case of migratory fish, the age can be told by the annuli or whorls on the scale, not by the number of rings as in a tree, but by their character. The process is much like identifying humans by their finger prints, excepting that the scales are much more revealing. "Annuli" by the way, is the plural of "annulus" and that is a Latin word meaning "ring" which we also adopted unchanged from the Romans. An experienced paleoichthyologist can examine a fos-

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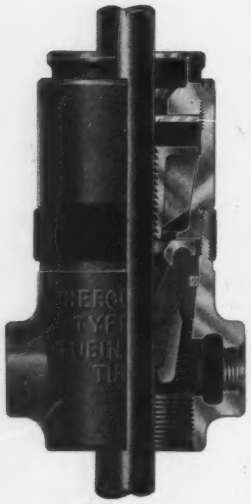

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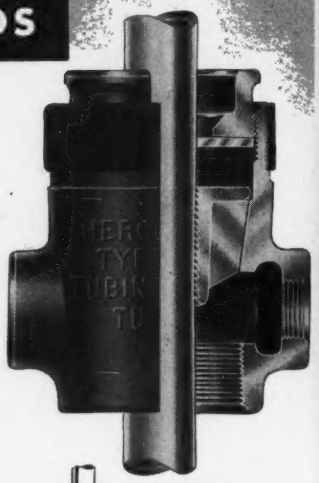
The dual purpose "Type J-5-S" Stripper Tubing Head is basically a "Type J-5" Tubing Head with a bowl (top section) screwed into the packing nut thread. The hinged slips, packing and packing nut are installed in the bowl (top section) with the tubing stripper in the body (lower section), thus permitting tubing to be run-in or removed under pressure. Test pressure is the same as the "Type J-5" Tubing Head.



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sil scale under the microscope and tell the name of the fish that wore it, when it lived, and if he or she is of the gossipy type, can even tell something of its sex life. When one remembers that the specimen more than likely had to be removed with meticulous care from a hunk of solid rock, is no bigger in diameter than an aspirin tablet, and is a few million years old, one must admit that this is quite a trick. It isn't really necessary, of course, to identify the fish, because classification of scale types in itself provides an excellent basis for correlating subsurface strata.

Distribution of Scales

Fossil scales are present to some extent in nearly all sedimentary layers but are often too fragmentary and distorted to be identifiable. At intervals, however, rich zones are encountered very much like the so-called "flood zones" of foraminifera in which there is a wide diversity of well preserved form. Most fish are fast swimmers compared with foraminifera, and scales, therefore, become more generally distributed in a much shorter time interval. A single scale might thus be expected to give a time correlation over a much broader area. A fortunate circumstance is that in some sediments in which there is a complete lack of foramens, fish scales occur in sufficient quantity to permit a positive definition rather than a negative one. That, of course, is more satisfactory from the scientific point of view. Altogether the process is simply a variation of the paleontological approach in which the sedimentary layers are identified by the presence, absence, abundance, or scarcity, of various kinds of fossil fish scales, instead of fossil foramenifera.

The Botanist Enters

One of the youngest of the oil finding scientists is the micropaleobotanist. The main stem of his name is derived from the Greek botane which means "plant or herb." His specialty is determining the age of the underground formations and revealing their undulations through microscopic identification of the minute fossil spores and pollens which they contain. Ever since this gnarled old earth first acquired its topsoil, the winds have been scattering these tiny seeds about with a rare abandon. Pollen is the Latin word for "fine flour" or "dust" and—by the way, if your mother has never told you about the birds and the bees, you'd better skip the next few lines. Pollen usually appears as a fine yellow dust and when examined microscopically is found to consist of a mass of grains, each one of which is actually a spore or seed (Greek sporos, "a seed.") So pollen is simply a mass of microspores! Now the part of this story that I blush to tell is that these elements play an important part in the unmentionable process known as fertilization, and are either responsible for or the result of, some pretty embarrassing promiscuity in the plant world. I intend to check into this rather thoroughly some time when there are no eavesdroppers about.

Important? Yes...but definitely no secret

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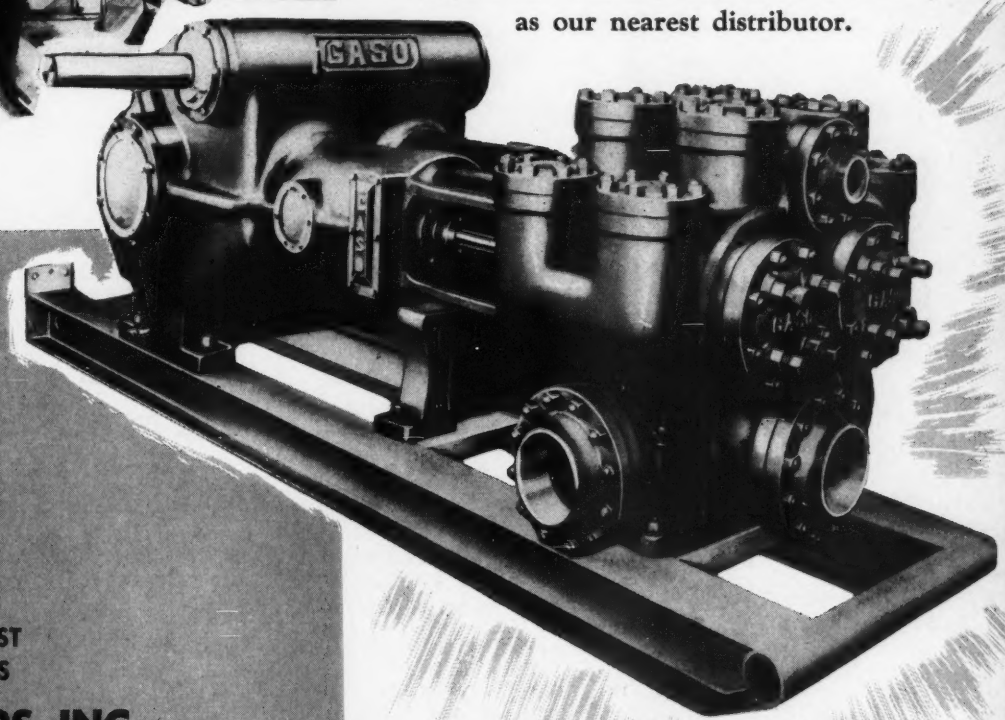

Fig. 2651-2652 — Gaso 12" stroke Duplex Piston Power Pump. Largest of Gaso models designed to pump oil or water through long lines at pressures from 475 to 1500 psi.

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How It Is Done

Meantime, it is easy to understand that, in view of their practically uninterrupted occurrence, these fossil spores . . . which are of infinite variety . . . present another means of determining the geological age of rock layers. If, for instance, the same proportion of the same types are found at 3000 and 5000 feet depths in two places a mile apart, it can with some certainty be deduced that the geological layer in which they are found, trends downward in the direction of the deeper hole. Micropaleobotany as an instrument for oil finding is still relatively new but data is accumulating fast. It promises one distinct advantage over correlation on the basis of animal fossils: Throughout the ages, animal remains have been washed down to the sea and have there eventually become embedded in sediments. Fossil pollens and spores, on the other hand, were tossed in every direction by the winds and are now found in inland areas where no animal fossils remain. Hence, they help to define the shorelines of ancient seas as well as to establish the geological age of the sedimentary deposits.

And The Biologist

The geobiologist has already been discussed in a rather limited sort of way. Perhaps, indeed, the one mentioned would be more correctly termed a geobacteriologist since he is largely concerned with bacteria and their role in the genesis of petroleum. Be that as it may, it must by now be obvious to even the least informed that the subsurface strata can be correlated with the geological calendar on the basis of anything, animate or inanimate, that has occurred with some inconsistency through a sizable period of terrestrial history. The thing, needless to say, must still be preserved in the sediments in some recognizable form, and it is a fairly safe bet that in the not too distant future the rocks will be swarming with new kinds of geoscientists. As a matter of fact, it could be that of a few million years from now the sediments will be defined on the basis of fossil geoscientists.

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JENSEN JACKS

Chemical Methods

At the moment one of the most interesting uses of geochemistry as an exploration aid involves the spectrographic analyses of rocks for certain rare minerals. These so-called trace elements are found embedded in the rocks in tiny flecks. They would not be easy to recognize by the old system of wet analysis but by means of a modern tool, known as the emission spectrograph, are readily revealed. The spectroscope is an optical device consisting simply of a compartment having a narrow slit to admit a beam of light, a prism to break the light into its color components, and a little telescope through which to view the spectrum. A spectrum, (plural spectra), in Latin is "an image," and — scope is from the Greek skopein, "to view." A spectograph thus is an instrument of this type that "records" the spectra from the Greek graphoes, "writing."

The Spectrum

It is commonly known that when a beam of light is passed through a prism it breaks up into a rainbow of colors, rang-

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ing from red to violet. It might not be quite so well known, however, that the light given off by the vapor of any given substance has its own distinctive and well recognized (by the expert) spectrum. For the same substances, the images always show the same arrangement of colors and lines in the same relative positions. So, theoretically at least, it is possible to identify all substances by their spectra. The "emission" spectrograph is simply one that is equipped to burn samples, which thus "emit" vapors. These latter provide the spectra on which the mineral analyses are based. The function of the instrument as an oil finder (it has many other uses) is to disclose whether or not any of the trace elements tend to concentrate in the rocks near an oil producing area. If this should prove to be the case and the element or elements were known, core analysis by the emission spectrograph would become a most welcome aid in petroleum exploration.

Using Water Analyses

Experiments have also been carried on for some time in an effort to find out what relationship, if any, exists between the composition of subsurface waters and the proximity of oil producing horizons. Nothing, in fact, is being ignored that might in any way help to remove a further modicum of uncertainty from the finding processes, and it could well be that here again some obscure component not ordinarily sought in subsurface water analyses, might turn out to be an indicator of importance. Another innovation that has already yielded data of considerable value to the finding scientists is radiocarbon dating. Extended investigation has revealed that every living thing has in its makeup a small amount of radio-active carbon, and that for any given organism, the ratio of radiocarbon to ordinary carbon remains the same during its entire life span. When an organism dies, however, there is no further replacement of the radio-active element and that which it contained at the time of its death disintegrates at a fairly accurately defined rate.

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If, therefore, at any time subsequent to death, the reduced ratio of radiocarbon to ordinary carbon be determined, it becomes a simple matter to calulate how long the organism has been dead, and hence the approximate age of any sediment in which it may have been embedded. Although the method is ineffective on organisms that are more than 40,000 years old, since by that time radio activity is too feeble to be recorded accurately, it nonetheless covers a sufficient span of time to permit an informative study of the mechanics of sedimentation. There is distinct hope too that the time element may be greatly extended, perhaps even to geological dimensions, by resort to uranium dating—a still more recent development. Uranium has a much longer life than radiocarbon.

The Wearing of Rocks

In the field of radio activity some interesting study has been made of the effect of atomic bombardment on sedimentary rocks. It has

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long been known that these rocks are constantly being worn down by the assault of radio active materials in the earth. As a matter of fact there are sports experts who believe this to be the reason for the rapidly diminishing time being recorded in track events—less than four minutes for the mile, as an example. It isn't really that the runners are getting faster but that the mile is getting shorter. In any case, the researchers are now armed with atom smashers which they use to accelerate tremendously the normal rate of disintegration, and through which they hope to learn a great deal that may be pertinent with regard to the aging of rocks. Atomic bombardment, either normal or accelerated, probably does more than simply wear away the rocks. There is a distinct possibility that it may be responsible for actual transmutations from one element to another.

Maybe The Alchemists Were Right

We once thought the old alchemists, whose ambition was to turn the baser metals into gold, were a bit off their rockers, but it begins to look as if they weren't quite so crazy after all. The radio active carbon mentioned in an earlier discussion is a derivative of nitrogen; uranium, we now know, can be eventually transformed into lead; and all of these substances not too long ago were believed to be as fixed and irresolvable as any element could be. We appear, indeed, to have passed into an era in which the transmutation of elements is about to become as common as republicans in Vermont. When the splitting of the atom was first announced the late Fred Allen asked with a shrug of disgust, "What can you do with half an atom?" Well, scientists are now taking the pieces and re-assembling them in new and wonderful form!

Changing Shapes

Some of the more advanced explorers into the mechanics of sedimentation have been carrying on another somewhat different type of rock deformation research. In this investigation rock samples are subjected to temperatures and pressures similar to those that they experience in the subsurface, and are then examined for effects. In this way it has been found, and it has been confirmed by geological observation, that hard, solid, seemingly immobile rocks tend to deform like plastics when even relatively low stresses are applied for sustained periods of time.

Lady—"But why should I sell my frigidaire and start buying ice from you?"

Iceman—"Well, lady, half the women in this town can't be wrong."

The driver's license examiner was taking a test ride with an applicant. A woman driving the car ahead put her hand out the window.

"See that?" asked the examiner, "what does that means?"

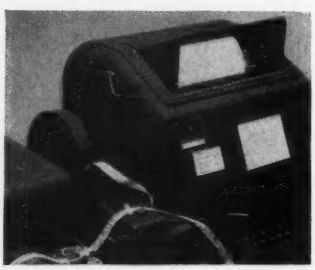
"Only one thing for sure," said the applicant, "The window's open!"

here's how

modern communications

can save time and money in your office

In this competitive era, time-saving communications can tilt the scales of business from loss to profit. To keep things running smoothly, you need the right equipment in the right place. And Pacific Telephone has the answers. Some of them are shown right here.



TELETYPEWRITER SERVICE sends written messages with phone-call speed. 2-way communication with your other offices—or other firms. Can make order-handling 90 per cent automatic!

AUTOMATIC ANSWERING SET gives and takes messages while you're out. For calls that mean business, your office is "open" 24 hours a day.

Modern communications can save time and dollars in your office. Let one of our specialists give you a plan tailored to your needs. No obligation. Just call your telephone business office.

Pacific Telephone

Stan Thomson

or who says gasoline is expensive?

"They say it in Britain, where a skilled carpenter gives more than a day's pay for just eight gallons.

"They say it in Ireland, where only one person in twenty owns an automobile.

"They say it in France, where the price is the same for eight gallons of gasoline or a pair of shoes.

"In the United States? Everything indicates that gasoline should be almost as expensive here, too.

"For instance, Union Oil's costs of building a refinery and the labor costs to operate it have tripled since 1937.

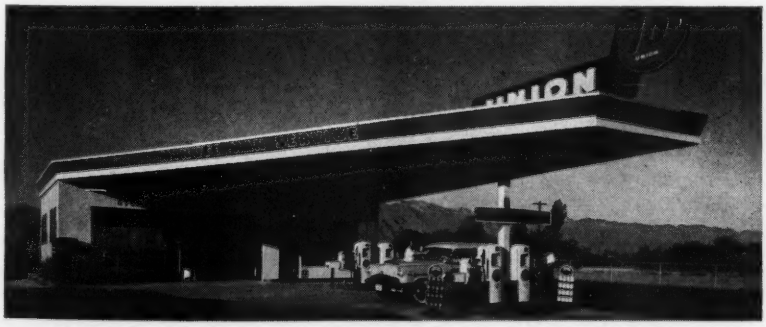
"We pay four times as much to put up a service station today as before the war.

"And fuel taxes you pay at retail have increased 5 cents a gallon in the last 20 years. (In that same time, our refinery price has gone up 4½ cents a gallon.)

"In spite of these increases, though, Americans pay less for their gasoline than anyone else in the world.

"WE PAY LESS FOR GASOLINE THAN ANYONE ELSE IN THE WORLD."

"What's more, two gallons of today's gasoline do the work of three gallons of the old product." * * *



As manager of Union Oil's refinery in the San Francisco area, Stan Thomson has a natural interest in the price of gasoline.

And, he points out, the comparatively low price of gasoline in this country is one measure of the efficiency of the economy under which we live.

Our competitive economy gives us such good value for our money that we enjoy the highest standard of living the world has ever known—and still have money left for savings.

YOUR COMMENTS ARE INVITED. *Write: The Chairman of the Board, Union Oil Co., Union Oil Bldg., Los Angeles 17, Calif.*

Union Oil Company OF CALIFORNIA

MANUFACTURERS OF ROYAL TRITON, THE AMAZING PURPLE MOTOR OIL

Personalities IN THE NEWS

B. S. & B. Elects Three New Vice Presidents

The election of three new Vice Presidents of Black, Sivalls & Bryson, Inc., oilfield equipment and steel products manufacturer was announced by Kenneth W. Lineberry, President. The three new officers have a combined record of 75 years of service with BS&B.

Floyd C. Myers, Manager of Sales and Service, Oilfield Equipment Division, Oklahoma City, was elected Vice President and Manager of Oilfield Sales, Mr. Lineberry announced. Mr. Myers, a BS&B'er for 28 years, has a long record of service in the oilfields with BS&B as office clerk, salesman, branch manager, assistant credit manager, district manager and manager of branch operations. In 1954, he was named manager of Oilfield Sales and Service.

Lawton L. Laurence, Manager of Engineering, Oilfield Equipment Division, Oklahoma City, was elected Engineering Vice President of BS&B and will serve in a staff capacity. Mr. Laurence began his career with BS&B in 1941, 16 years ago, upon graduation from the University of Oklahoma, where he received the degree of B.S. in Petroleum Engineering. He has served BS&B as a development engineer, as Chief Engineer of the Oilfield Equipment Division, and as Sales Manager of that division. In 1954, he was named to his present position of Manager of Engineering, Oilfield Division. Mr. Laurence is the author of a long list of published technical articles on oilfield production and natural gas processing equipment, and is particularly well known for his contributions in the fields of gas dehydration and low temperature separation of oil and gas condensate.

William F. Gates, Director of Purchases, with offices in Kansas City, was elected Purchasing Vice President, and will serve in a staff capacity. Mr. Gates has 31 years of service with BS&B, starting out in Oklahoma City in 1926 as Purchasing Agent. In 1932, Mr. Gates was placed in charge of BS&B's company-wide purchasing operation, and in 1946 moved to the company's general offices in Kansas City. In 1950, he was named director of Purchases for the company.

Basin Chapter API Holds Last Meeting of 1957

The Los Angeles Basin chapter of the API held its last meeting of 1957 at Shell Recreation Hall, Signal Hill on November 19, 1957. An interested group of about 250 members heard an entertaining and informative talk by M. W. Morris, Southern Division General Superintendent, Producing Department, of Standard Oil Company of California, Western Operations, Inc.

Mr. Morris described many of the general problems associated with the development of California's offshore oil deposits. These problems begin with the geological exploration of the area and never seem to come to an end.

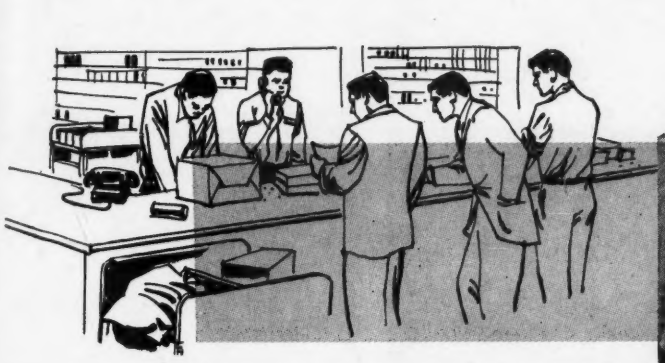
The major differences between offshore and onshore operations are time and money. Mr. Morris stated that about two years and 12 million dollars, including 7¼ million dollars bonus for the 5,500 arce lease, lie between the initial lease bid offer and the completion of the first evaluation well at the Summerland offshore lease. This lease is held jointly by Standard of California and Humble Oil and Refining Company.

Mr. Morris pointed out there were obvious differences of opinions held by various oil companies as the two other bonus bids on the 5,500 acre lease were 5 2/3 million dollars and 2/3 million dollars.

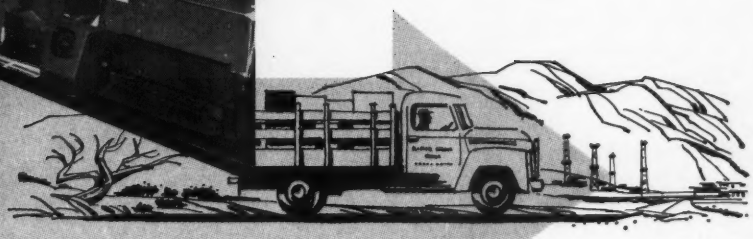
The platform from which the offshore wells will be drilled will be built by National Steel and Shipbuilding Company of San Diego. It will be towed to the offshore drill site and sunk in place. Caissons 27′ in diameter at the lower ends of the 36″ diameter legs will be jetted through the ocean floor. The working area of the main deck is 110′ x 110′. All of the auxiliary superstructure, drilling equipment and derrick will be installed after

Officers and Speakers at API—November 19, 1957. Standing, left to right: Donald S. Hare, Monterey Oil Co., Chairman; M. W. Morris, Standard Oil Co., Speaker; J. M. Auser, Standard Oil Co., Speaker; Harold E. Nissen, Signal Oil & Gas Co., Vice Chairman.

Bakersfield gets the word... FAST!



REPUBLIC SUPPLY'S NEW DIRECT WIRE SERVICE



TIES ALL FIELD STORES TO CENTRAL STOCK SUPPLY

Bakersfield does get the word—but fast. Same for Long Beach, San Leandro, Phoenix, or any of the 9 offices and warehouses linked by Republic's efficient Western Union network. Now these stores can fill local orders almost as swiftly as though a warehouse was in the same city...thanks to Republic's newly-installed direct wire system that ties them to central stock warehouses. In addition, each store can "talk" to any other office on the network, affording complete assistance and prompt deliveries for nearby Republic neighbors. Designed to provide instant communication and to speed every order...large and small...this is just one more instance of Republic's desire and all-out effort to serve Western industry with real performance plus!

republic supply — The Republic Supply Company of California

Main offices in Los Angeles & San Leandro • Phones—Los Angeles: RAymond 3-2511, PArkview 8-7151; San Leandro: LOckhaven 2-0414, Enterprise 1-1060 • Pipe, valves & fittings • abrasives • shop supplies & tools • rigging materials • industrial rubber products • machinery • oil field supplies • fire equipment

an independently owned and operated company serving western industry

the basic platform is in place.

The 140′ derrick is a modification of an original design of The California Company, a subsidiary of Standard of California operating in the Gulf Coast. The water table is 30′ x 30′ and allows for the drilling of 25 wells, five on a side in a square pattern, from the one drilling platform.

As an illustration of the basic economics of offshore drilling, Mr. Morris pointed out that at the first of 1957, 1.8 billion dollars had been invested by the oil operators of the Gulf Coast in offshore wells while only 1/3 billion dollars worth of oil has been recovered. Current expenditures are such that about one million dollars per day are being spent while about 400,000 dollars a day worth of gross oil is produced. Lifting costs and royalties must be taken out of this gross production value.

Mr. Morris stated that in his opinion, there will be no offshore "boom" in California for rather obvious reasons, but rather there will be a continued and steady development.

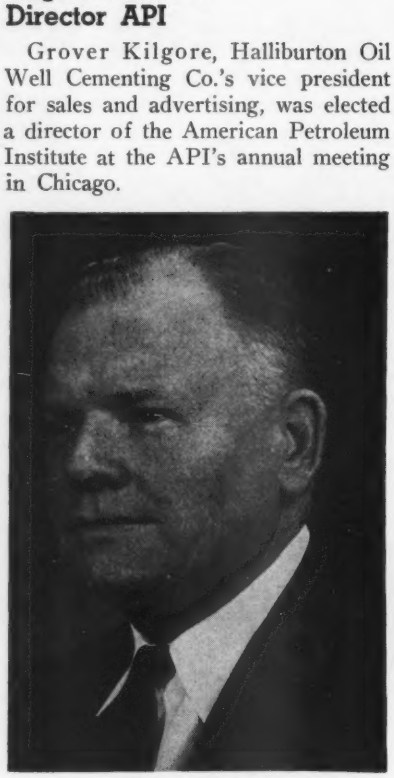
At the conclusion of Mr. Morris' talk, Mr. Jack Auser, Drilling Superintendent of the Southern Division, Producing Department, Standard Oil Company of California Western Operations, Inc. narrated a film taken aboard the "Western Explorer," a coring boat which did much of the preliminary lease evaluation work. Mr. Auser is intimately acquainted with the core boat operations and presented an excellent and informative narration.

President Eisenhower has named Lt. Gen. James M. Doolittle, retired, to a special committee to advise him on scientific matters. Doolittle, who led the first World War II air raid on Tokyo, is now vice president of Shell Oil Company. He also is a leader in aeronautical research and other scientific pursuits.

Charles A. Nichols Jr., who has had a distinguished career of 30 years service in foreign climes with an oil company, has been appointed Foreign Petroleum Coordinator in the Office of Oil and Gas at Washington. Nichols succeeded Ralph S. Fowler, now Petroleum Consultant to the Director of the Office of Defense Mobilization.

Kilgore Elected Director API

Grover Kilgore, Halliburton Oil Well Cementing Co.'s vice president for sales and advertising, was elected a director of the American Petroleum Institute at the API's annual meeting in Chicago.



Grover Kilgore

The Halliburton executive, who has been a member of the API's board of councillors for five years, currently is president of the Petroleum Equipment Suppliers Association, national organization of oil field service and supply companies.

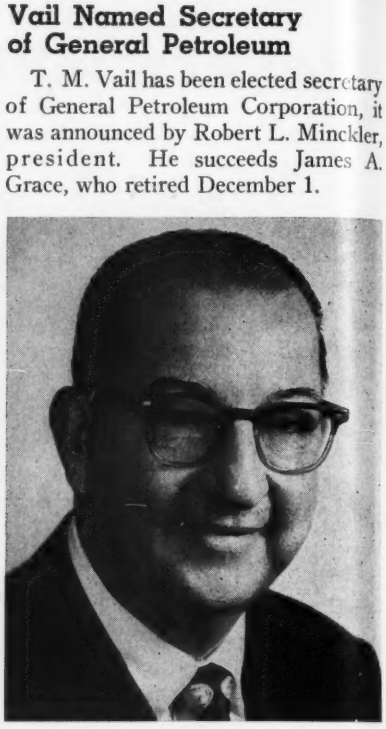
Secretary of the Interior Fred Seaton named Kilgore to the National Petroleum Council this spring. The council is a group of oil executives advising the government on petroleum production, refining and distribution.

Charles G. Horn, drilling superintendent, who recently changed headquarters from Anaheim to Bakersfield, has also been identified in foreign field operations, including Colombia and other important areas elsewhere.

D. W. Gresser, Shell Oil Company exploration division manager in Durango announces two new Shell district offices to be located in Durango. E. G. Hoskins has been appointed district geologist for the new Farmington, New Mexico, division. J. E. Holzman will be in charge of a new Durango district office.

Vail Named Secretary of General Petroleum

T. M. Vail has been elected secretary of General Petroleum Corporation, it was announced by Robert L. Minckler, president. He succeeds James A. Grace, who retired December 1.



T. M. Vail

Vail, attorney and assistant secretary prior to his promotion, has been with General Petroleum for 28 years. He joined the company as a sales attorney, and has held various positions since 1929, including district sales manager in Pasadena and special representative.

He received his pre-legal training at the University of California at Los Angeles, where he was a member of the baseball team from 1921-24. He received his LLB from the University of Southern California Law School.

Vail resides at 858 El Campo Drive, Pasadena.

Grace is retiring after 21 years of service. He has been secretary of the corporation since the first of last year and manager of the contract bureau since 1944.

A veteran of World War I, he joined General Petroleum after being engaged for several years in real estate and banking.

He resides at 3156 Charing Cross Place, Glendale.

Peter B. Kyne, noted author, who in addition to his 50-year writing career also engaged in oil drilling, gold mining, cattle ranching and horse raising, died at 77 in San Francisco.

The Desk and Derrick Club of San Francisco announces the election of the following new officers for 1958: President, Dorothy Stewart, Standard Oil Company of California; First Vice President, Jackie Aldrich, American Independent Oil Company; Second Vice President, Shirley Baxter, American Bitumuls & Asphalt Co.; Recording Secretary, Jeanine Forrest-Pearce, Evanstrom Company; Treasurer, Olga Shahovskoi, Honolulu Oil Company; Director, (for two-year term), Margo Gildea, Richfield Oil Corporation. Officers whose terms are held over from 1957 include Marie Doyle, Junior Past President and Director, (American Bitumuls & Asphalt Co.) and Veronica Hoare for one-year term (Tidewater Oil Company).

The new officers were formally installed at a dinner meeting held on November 15th, at the English Room of the Canterbury Hotel by Lydia Babka Installing Officer.

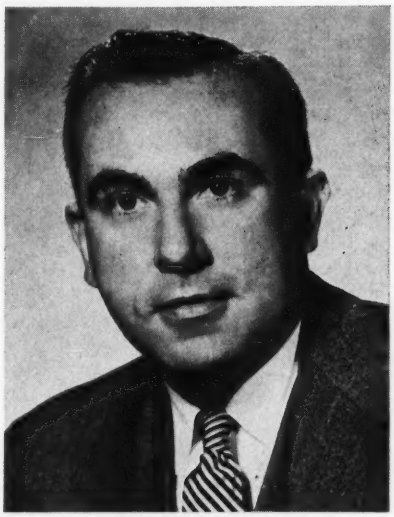
The club is the Bay Area affiliate of the oil industry's all-woman Association of Desk and Derrick Clubs of North America. It sponsors educational activities for women in the oil industry.

Horace C. Flanigan of New York, chairman of the board of Manufacturers Trust Co., has been elected a director of Union Oil Company of California.

Gendron Advanced By Tidewater Oil

John W. Gendron has been advanced to the new post of administrative assistant to the president, it was announced by President D. T. Staples of Tidewater Oil Company.

Gendron was formerly manager of Tidewater's oil purchase and exchange department. He is a director and vice president of Tide Water-Iran, Ltd., and a director and vice president of Iricon Agency, Ltd., of which he was president in 1956-57.



John W. Gendron

A native of Washington, D.C., he was educated at American University and the University of Oregon, receiving a bachelor's degree from the latter. He also studied law at Georgetown University and the University of San Francisco, and attended Stanford University under the company's management development program.

After leaving the Navy as a lieutenant commander in 1946, Gendron joined Tidewater's western division as a stock dispatcher in the transportation department. He became assistant manager and then manager of the divisional oil purchase and exchange department. In 1954 he was placed in charge of oil purchase and exchange for the entire company.

He is a member of the American Petroleum Institute's division of transportation, the Petroleum Club of Los Angeles and the Pipe Liners Club. He resides in Palo Alto, California, with his wife, the former Mary P. Sullivan, and three sons: John, Robert and David.

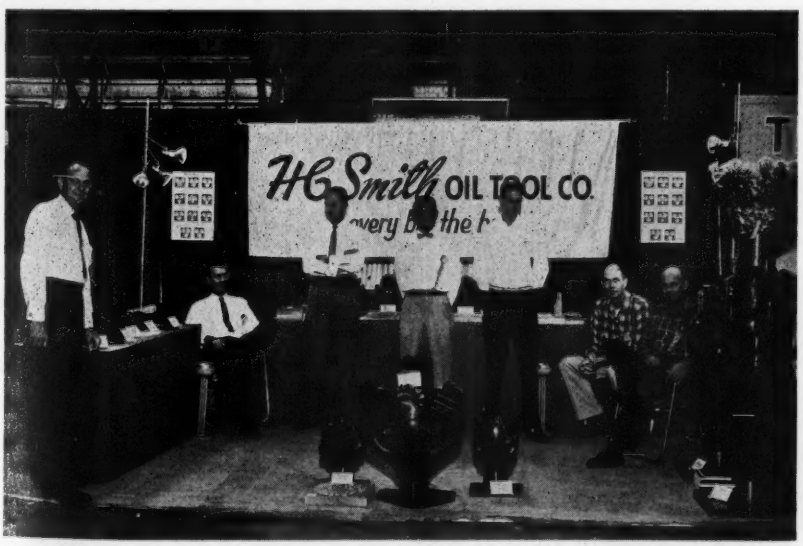
Norman Hardy who began his oil career as a geologist with Standard Oil Company of California, has been named president of Arabian American Oil Company.

A. L. Bishop has been appointed Assistant Superintendent of The Texas Company's Puget Sound refinery which is now under construction at March's Point, near Anacortes, according to an announcement by Joseph T. Froehlich, Superintendent. Mr. Bishop was formerly an area supervisor at Texaco's Los Angeles refinery.

A native of Denver, Colorado, Mr. Bishop studied at the California Institute of Technology, receiving a B. S. degree in Applied Chemistry in 1936. He joined Texaco in 1937, and worked in the Producing Department until 1944 when he became a Chemical Engineer at the Los Angeles refinery. He was supervisor of the pressure still area there at the time of his appointment as Assistant Superintendent of the Puget Sound refinery.

The new refinery, Texaco's second on the West Coast, is scheduled to be completed in January, 1959.

Loren L. Hillman, John C. Holmes and Viola Haisch are given as directors of the new Hillcrest Oil Company of 555 south Flower street, Los Angeles, a California corporation.



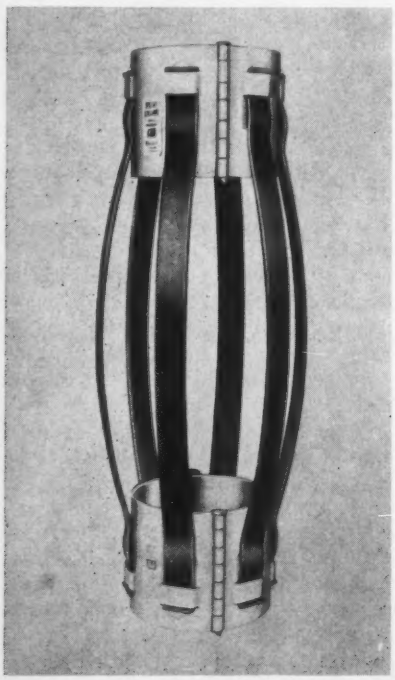
Shown above are representatives of the H. C. Smith Oil Tool Co. at the recent Louisiana Gulf Coast Oil Exposition at Lafayette, Louisiana. Left to right: Arthur S. Marshall, vice president, sales; Cleve Holt, Texas Gulf Coast manager; Hal Bentson, chief engineer, sales; Burley Peligo, sales, Houma; James Beadle, warehouse, New Iberia; LaRue Donald, manager, Lake Charles Division; and Louis Provost, sales, New Iberia.

Brown Mud Moves To New Location

The Brown Mud Company has just moved to its new headquarters at 4330 W. 190th Street (P. O. Box 2037), Torrance, California. The new 'phone number is: ORegon 8-4158. The office was formerly at 4606 W. 18th St., Los Angeles.

No Welds, No Rivets In New BJ Centralizer

A casing centralizer with springs pre-stressed in assembly is announced by Garth Nicolson, vice-president and general manager for Byron Jackson Tools, Inc. "This pre-stressing is an exclusive feature of the BJ Red Top Centralizer," Nicolson points out. "It serves two important functions: It makes possible tremendous centralizing power within a slim overall design, and it does away with the need for welds and rivets. The spring ends are inserted in formed metal pockets on the end cages and are held fast by their own built-in tension."



The slogan for all BJ Centralizer promotion is "The Spring is the Thing." There is good reason for this. Because of the unusual design of the Red Top Centralizer, Byron Jackson was not restricted to the use of the lower alloy spring steels necessary for welding. Tempered AISI 9260 silicon manganese is used for the springs. Although the high alloy spring steel is expensive, the BJ Centralizer remains competitively priced because its assembly is so quick and easy. In fact, the Red Top can be shipped knocked-down in order to save on export costs.

To meet every requirement the centralizer is available with springs of four different cambers, each color-coded for ease of identification.

The new centralizer is a result of two years of close collaboration between Byron Jackson Tools, Inc. and the parent company Borg-Warner Corporation, who also tapped the extensive cementing know-how of BJ Service, Inc. Manufacture of the product is by the Borg-Warner Spring Division, whose model manufacturing and heat treating facilities serve America's automotive industry in the manufacture of springs and other parts and assemblies for clutches, torque converters, and automatic transmissions.

In announcing the new centralizer, Garth Nicolson said, "After two years of exhaustive testing program, we are offering the petroleum industry a product that we feel is the result of the very finest scientific, engineering and metallurgical talent. The BJ Red Top is a product that can greatly increase the efficiency of any cementing operation."

BJ Centralizers are sold through oil field supply stores as well as by sales and service field stations of Byron Jackson Tools, Inc., and BJ Service, Inc.

Welex, Incorporated Succeeds Welex Jet Services, Inc.

A new wireline service company, Welex, Inc., with general offices and manufacturing facilities in Fort Worth, has been formed from the combined assets and personnel of the former Welex Jet Services, Inc. and the Electrical Well Services Department of Halliburton Oil Well Cementing Company. Officers of the local firm are: Ray O. Shaffer, president; J. B. Vaughan, vice president-sales; Tom E. Morton, vice president-operations; T. W. Painter, vice president-manufacturing and administration; and H. T. Jarmon, secretary-treasurer.

The new company was formed to provide better and more complete wireline services to oil operators and producers. Welex, Inc. offers the most extensive line of jet perforating available in the oil field coupled with radioactivity well logging, electric resistivity logging, side wall coring and all other necessary auxiliary services.

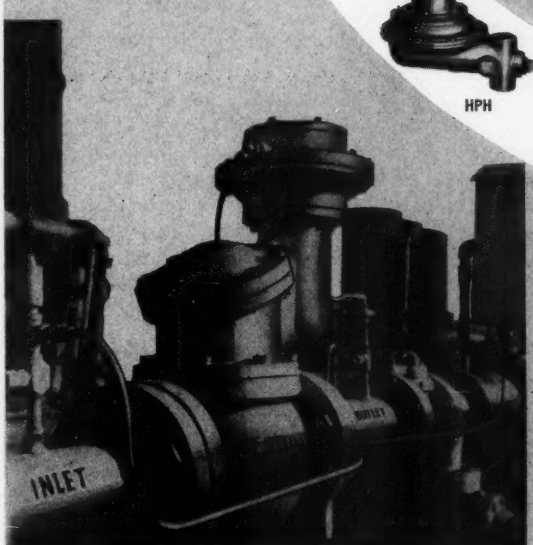
As a foundation for the services offered by Welex, Inc., the most progressive research and development program of any oil well service company provides the oil industry with the latest developments and processes to insure the best service available to the oil industry today.

Besides domestic operations, Welex, Inc. subsidiaries offer the same services in Canada, Peru and Trinidad. In the immediate future, the company plans to begin operations in Venezuela and extend them throughout the world wherever oil is to be found. With this program of continual expansion, Welex, Inc. will be able to offer the most complete line of oil well wireline services to the oil producing areas of the world whenever and wherever they are needed.

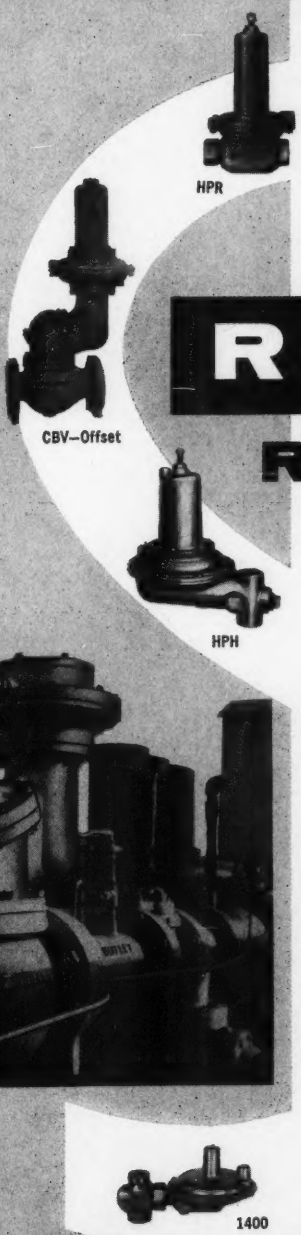
Dipmeter Curve Comparator Simplifies Dip Calculations

Calculating the dip of a formation from the dipmeter requires the accurate measuring of the displacement between the three dipmeter curves (see Fig. 1). Until the development of the dipmeter curve

CONTROL
IS THE VITAL ELEMENT



MAKING GAS BEHAVE



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REGULATORS
can put new profits
in your production

Controls are always a vital part of the investment in any gas installation. Regulator efficiency is a very important item in determining profits on your operations.

The rugged, precision construction of RELIANCE Regulators insures against expensive down time and provides year-in, year-out dependability, efficiency and economy.

From wellhead to finished product, positive automatic control in every phase of gas production can put new profits in your operations.

Bulletins are available on all types of RELIANCE Regulators

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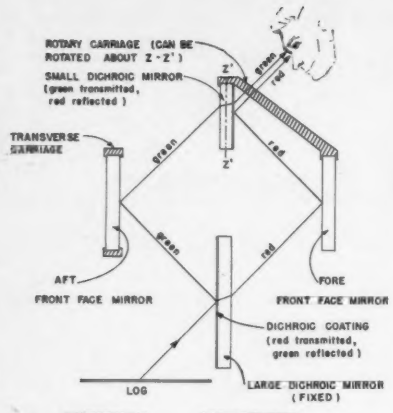
INCORPORATED (ESTABLISHED 1836)

AMERICAN METER CO.

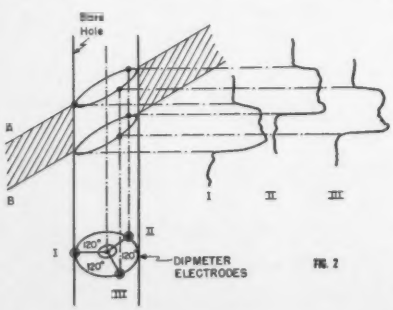
RELIANCE REGULATOR DIVISION
ALHAMBRA, CALIFORNIA



comparator, this displacement was measured by superimposing two transparent paper copies of the original recording. Shifting of the two copies to ascertain the correct match is a difficult and time-consuming process. In addition, the use of the two transparent log copies for correlation can cause calculation discrepancies due to paper shrinkage and also the copies are quite costly with today's long sections of continuous dipmeters.

The dipmeter comparator solves all of these disadvantages—no prints are required; curve matching is done directly from the original recorded log.

The dipmeter comparator (see Fig. 2) is a device that optically superimposes one curve upon the other and in different colors. When a dipmeter log is placed under the comparator, the operator sees two different colored images of each of the three dipmeter curves. These images can be shifted to match each other by the use of two control knobs (transverse shift and Lateral shift). The Lateral shift is calibrated to record directly the depth shift between curves thus providing



the necessary data for dip calculations. This optical superimposing of one curve upon the other can be done faster and with better accuracy than with the former method of matching prints.

All Schlumberger dipmeter computing offices are now equipped with the new comparator. Schlumberger has also announced that the dipmeter comparator is available to interested individuals or firms.

Schlumberger Develops New Liner

A new bimetallic liner for shaped charges in perforating, which does not plug the perforated hole and yet maintains the high performance of the conventional type charge, has been developed by the Schlumberger Well Surveying Corporation.

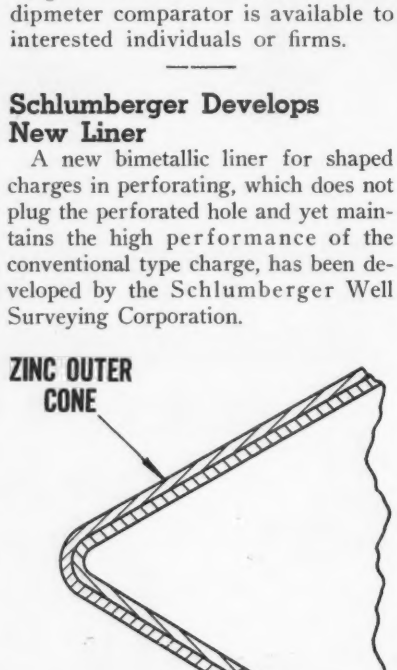


Figure 1

This accomplishment climaxes years of effort in the industry to eliminate the slug in shaped charge perforating.

This newly-developed liner, termed "bimetallic" because it consists of both zinc and copper cones, produces only a very small slug which does not enter the perforated hole under downhole conditions of pressure and temperature. The slug produced is so small that plugging of the perforation could not be effected even if it entered the hole.

Various approaches had been attempted prior to this new method.

Among these, was the effort to stop or "catch" the slug. Mechanical devices such as special porthole covers and washers have been used. Charges have been modified to throw the main performance factors out of balance in an effort to produce a hole large enough so that the carrot would not remain in

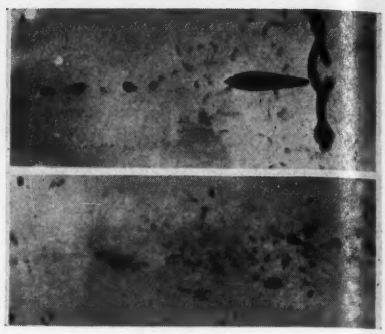


Figure 2

the perforation. Others have been fitted with symmetrical cone liners in an effort to force the carrot to one side of the path of the jet and prevent its entrance into the hole.

A number of other modifications to liners has been made—such as grooving and truncation of the cone. One novel approach consisted of the "disintegration" of the slug through use of a baffe type charge.

However, both public and private tests have borne out that none of these methods or devices have been successful in eliminating the slug while maintaining high performance specifications.

In the basic approach to the problem, Schlumberger engineers knew that the slug was an inherent and inseparable part of the jet process in charges with a solid copper liner. It was decided to go directly to the root of the problem and try to develop a new liner—one which, without interfering with the effectiveness of the charge, would either produce no slug at all or one so small it would be incapable of plugging the perforation.

Many tests were conducted using various approaches, but in all cases either the slug remained or the performance of the charge was so reduced that the test devices could not be considered as efficient perforators.

Finally, the new type of liner with zinc and copper cones arranged as per Figure 1 was developed. Zinc represents the outer element of the cone and copper the inner.

According to the principles of the jet process, the outer portion of the solid copper line adjacent to the explosive forms the slug. During the slug formation, the metal is subjected to very high temperatures approaching, but not exceeding, the melting point of copper.

It was reasoned that if this outer section of liner was replaced with some

metal of low melting point, it would be volatilized under the high temperatures and pressures attending the process—thus eliminating the slug. At the same time, if the inner liner of copper were maintained, performance of the jet would not be impaired.

These conclusions were borne out in actual practice. Where copper is maintained as the inner liner and zinc is used as the outer portion, both of these conditions are satisfied. The jet produced has the same penetrating power as the jet from a plain copper liner, yet the outer zinc portion rapidly volatilizes during the course of jet formation, producing no slug or a greatly reduced one.

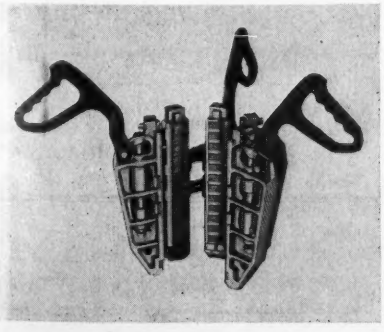
In the development of the bimetallic liner, considerable testing was done using different metals such as lead, zinc, aluminum and their alloys as the outer liner. While several of these functioned equally well, zinc was chosen for reasons of production.

The firing process of shaped charges, with both the solid copper liner and new bimetallic type, are illustrated in the series of radiographic pictures of Figure 2. These two flash radiographs show the development of the explosion at a few microseconds after detonation.

In the solid copper Fig. 2A, the slug formation is clearly defined; while in the bimetallic charge Fig 2 B, the slug is obviously disintegrated. The effectiveness of the bimetallic construction in reducing the slug weight, through volatilzation of a part of the liner material, is evident.

Baash-Ross Announces New Slip

Baash-Ross has announced a new, lightweight rotary slip designated the Type "G" Bantam Slips. Designed to minimize crew fatigue without sacrificing rugged construction, the 4½" size weighs only 96 lbs. The manufacturer states that these slips have the lightest weight to load capacity ratio on the market.



Manufactured for all standard types and sizes of rotary tables, they are made in three body sizes—2⅞", 4½" and 5½". A unique unitized design assures uniform setting of the multi-body segments in any rotary table. Rated capacity is 7500′ of 4½" drill pipe.

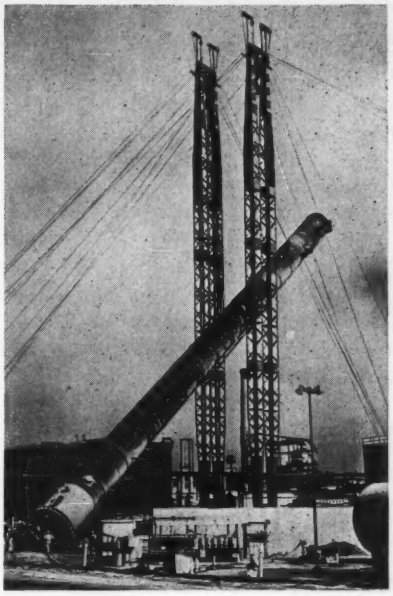
These slips are so constructed that a toggle action under torque provides a means of holding drill pipe and tubing thus allowing "breaking out" and "making up" joints with less use of back up tongs. The vertically grooved body backs—which are hardened to insure extra strength and toughness—will allow the slips to release easily from the master bushing when weight is removed.

The simplicity of design allows for quick and easy changing of the liner segments by the removal of only one bolt in each body segment. The body is recessed to safely retain the liners, in such a way that all stresses are transmitted directly to the slip body. Replaceable liner segments—which are 4" long and similar to regular Baash-Ross "DU" Slip Liners—are available to catch three sizes in each of the three body sizes which covers a full range from 21/16" to 5½" inclusively. Should the liners wear unevenly they may be inverted to maintain maximum gripping action and slip performance.

MACCO Corporation Completes Unusual Assignment

The Refinery and Chemical Division of MACCO Corporation, Paramount, California, has completed a significant engineering and construction assignment. A 350-ton deisobutanizer distillation column, 212 feet high, was raised into position in one piece at the El Segundo Refinery of Standard Oil Company, Western Operations, Inc. The lift, by Pacific Crane and Rigging Division of MACCO, was one of the heaviest ever accomplished in the United States with a load of this type.

The gigantic fractionation tower, equivalent in height to a 20-story skyscraper, was erected on its foundation with 4 hours' lifting time by MACCO riggers. The success of the



operation was assured by thorough preparatory engineering and analysis.

The 90-tray deisobutanizer column is an integral part of a plant designed by Standard of California engineers, to process a butane and lighter feed stock and produce components used in the manufacture of high octane and aviation gasoline. MACCO Refinery and Chemical Division was the prime contractor for construction of the project.

Grant Tool Acquires Zublin

Grant Oil Tool Company has announced the acquisition of the Zublin line of drilling tools. Grant has obtained all patents and manufacturing rights for Zublin Differential Bits, Simplex Bits and Drain-hole equipment.

"The manufacturing of Zublin equipment has been transferred to Grant Oil Tool Company's new main plant in Los Angeles," states Grant Vice President A. H. Salvatori, "and sales and service for the Zublin line have also been brought into the expanded Grant MacClatchie sales organization. The integration of Zublin manufacturing, sales and service into the Grant organization well assures Zublin customers continued high quality products." For additional information about the Zublin line, contact Grant Oil Tool Company, 2042 East Vernon Avenue, Los Angeles 58, California.

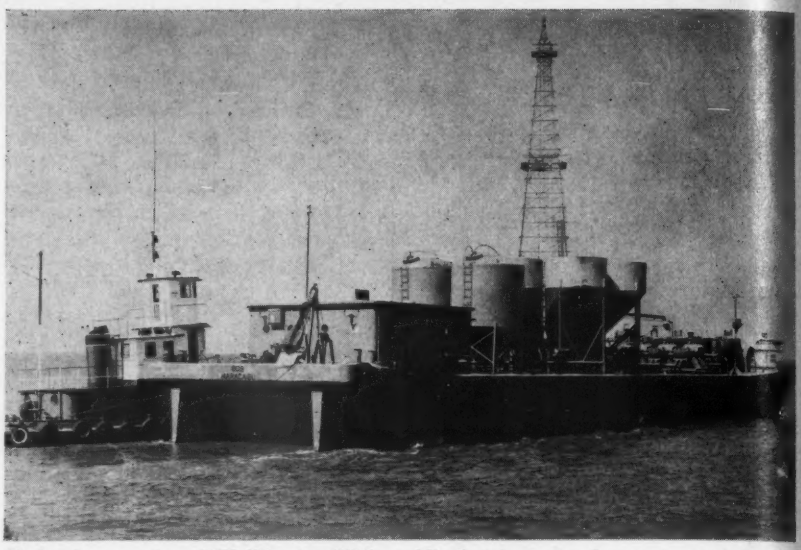
'Halliburton 808' Is World's First Fracturing Barge

The world's first oil well fracturing barge soon will go into service on Venezuela's Lake Maracaibo.

Now being towed to South America from New Orleans, the 130-foot steel "Halliburton 808" is the first fracturing unit built for water locations. It will be used by Cia. Halliburton de Cementacion y Fomento, the Venezuelan subsidairy of Halliburton Oil Well Cementing Co.

Fracturing on Maracaibo basin wells was first applied in 1954 by Halliburton. Since then more than 200 wells have been treated and producers have indicated stepped-up fracturing programs for water locations. So far the lake wells have been fractured with trucks carried on barges.

"Both the barge and its equipment were designed for the unusual assignment of fracturing wells at water locations," said Ralph R. Emery, Halliburton's vice president for foreign operations. "Based on an average 1500 sack fracturing job, the '808' will do the work of two fracturing trailers, a sand proportioner truck, six sand transports and probably a dozen oil transports that would be required for a comparable fracturing job on land. In addition, the '808' can perfom at least two such fracturing treatments before returning to base."

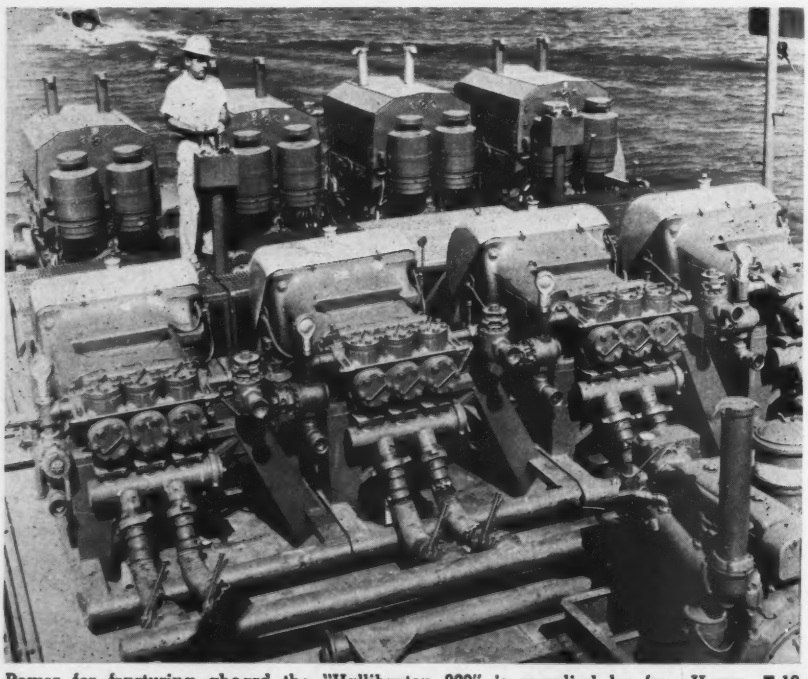


Shake-down cruise of "Halliburton 808," world's first fracturing barge, is conducted in Louisiana waters. Built at New Orleans, the "808" is now being towed to Venezuela for use at Lake Maracaibo locations. Ralph R. Emery, Halliburton Oil Well Cementing Co.'s vice president for foreign operations, said the barge's first fracturing treatment on a water location at Maracaibo will be around January 1.

Fracturing equipment aboard the "808" includes four Howco T-10 pumps, each powered by a 600 horsepower Diesel engine; a sand proportioner for mixing fracturing fluids and sand; and a chemical agitator. All fracturing equipment, control consoles and storage for sand and chemicals are located on deck.

Below deck the barge has storage for fracturing fluids, fresh water and Diesel fuel. It carries 4,000 barrels of fracturing fluid, 3,850 sacks of sand, 15,800 gallons of Diesel fuel and 6,000 gallons of fresh water. Air conditioned living quarters and galley are provided in a deckhouse.

The barge was built by Higgins, Inc., at its New Orleans shipyard. Fracturing and most auxiliary equipment for the "808" was shipped from Halliburton's Duncan, Okla., manufacturing plants and mounted on the barge at the service company's Harvey Canal docks across the Mississippi river from New Orleans.



Power for fracturing aboard the "Halliburton 808" is supplied by four Howco T-10 pumps, each driven by a 600 horsepower Diesel engine. The unit is capable of handling up to a 4,000 barrel fracturing treatment.

Reese H. Taylor, Union Oil Company of California chairman, has been re-elected a class B director, representing industry, of the Federal Reserve Bank of San Francisco. He was named for a new three-year term, starting January 1, 1958. The Union Oil chairman was elected by member banks in Group Two, those having a combined capital and surplus in excess of $400,000 and less than $4,000,000.

Birtiemae Hook, Signal Oil & Gas Company, is the new president of the Desk & Derrick Club at Long Beach. At Ventura, Allene McCormick, has been elected president of the Desk & Derrick Club for the ensuing year. She is with Intex Oil Company at Ventura.

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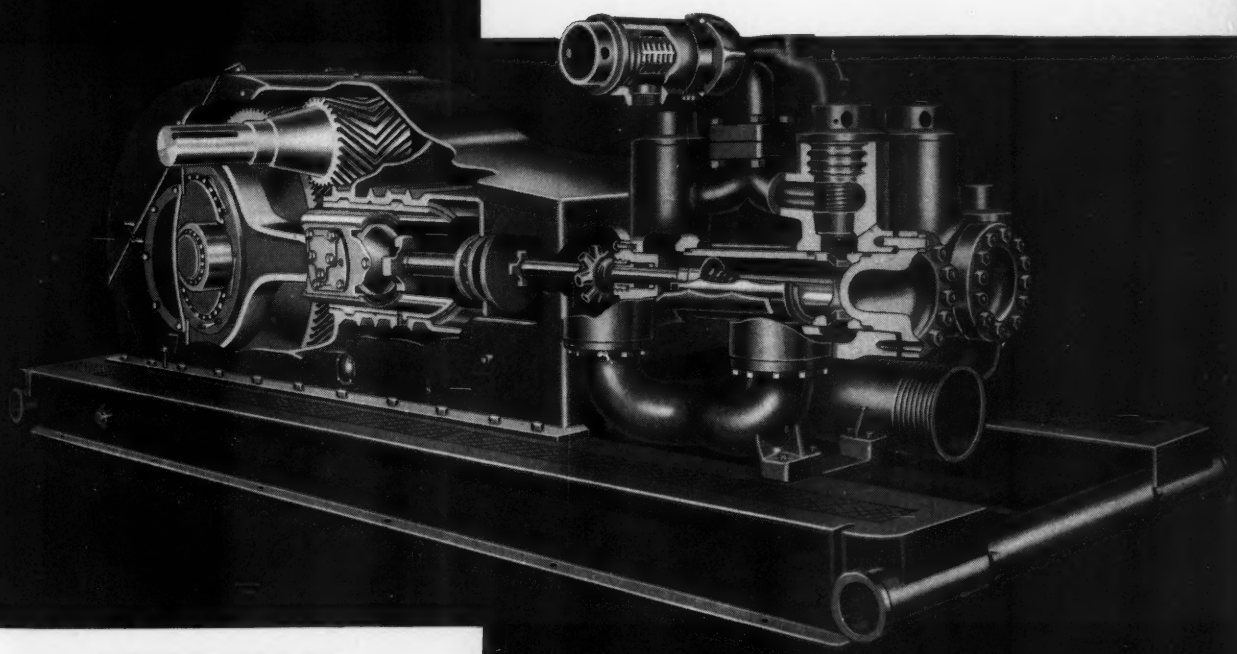
Examine this cross section of a Continental-Emsco Series D Slush Pump. Note how *extra power* has been built into the large main gear . . a wide-faced, forged-steel herringbone gear . . heat treated for years of heavy-duty pumping. The pinion and pinion shaft are integral . . made of high-alloy, forged steel . . fully heat treated.

Eccentrics are equipped with large diameter roller bearings, which results in an extremely narrow and compact power end. The eccentric straps are made of one-piece alloy steel.

You can see how the sides of the power-end housing are not thick, as are solid castings. Steel plates and shapes have been utilized instead of bulky castings to provide a light, rigid power-end. This is *Fabriform construction* . . the big *weight-saving* feature of Continental-Emsco Pumps for lower-cost transportation and easier rigging-up. You get *more horsepower per pound* than in any other slush pump.

Maintenance features are outstanding in the design of the D Series Slush Pumps. Patented "exposed" liner design *minimizes fluid-end washouts* caused by liner-packing failures, and no greasing is necessary, since lubrication is completely automatic.

One of these six Continental-Emsco Slush Pumps will meet your drilling requirements: D-175, D-300, DA-500, D-700, DA-850, D-1000. Ask your supply representative for all the data on these pumps.



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THIS LAUGH

OFF!!

Drive-in theater: Where a guy goes to shut off his ignition so he can try out his clutch.

"I've just heard about your husband being in the hospital. What happened?"

"It's his knee. I found a blonde on it."

The day after Macpherson's wife presented him with an offspring, the proud father was seen in the drug store purchasing a baby bottle.

"Man, that's scandalous extravagance!" said a fellow-countryman.

"It's necessary, though," sighed Mac. "The woman's gone and had triplets."

The old philosopher says: "It's not the ups and downs in life that bother us—it's the jerks."

Young Son—"Dad, Mom just backed the car out of the garage and ran over my bicycle."

Dad—"Serves you right for leaving it on the front lawn."

Writing for the San Francisco News, Jack Rosenbaum offers this one:

"A local trailer company lists one important advantage, 'You have a place to live while you're looking for a place to park'."

Buxom lady (to friend sun-bathing in nude)—"Here comes a man."

Second ditto—"Heavens, I'd better put in my teeth."

When a ship finally put into a small island where a distress signal was noticed, the crew found two women and the corpse of a man, who had died recently. One of the women explained his death with: "He simply wore himself out and died from exhaustion."

The captain could not grasp it all, so the women continued:

"You see, he kept running from spot to spot to tear down the distress signals we kept raising."

We know a man, troubled with insomnia, who takes a shot of bourbon at regular intervals. Doesn't make him sleep, but it makes him happy to stay awake!

We went dancing in a night club so crowded I was dancing cheek to cheek with the girl behind me.

A cross-eyed rooster was chasing two hens. One said to the other: "Let's separate or he'll miss us both."

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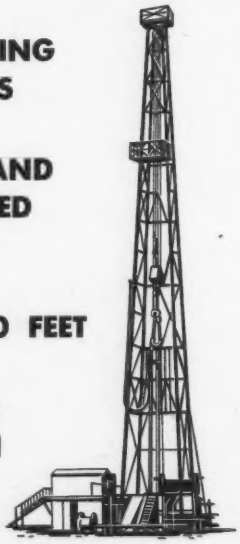

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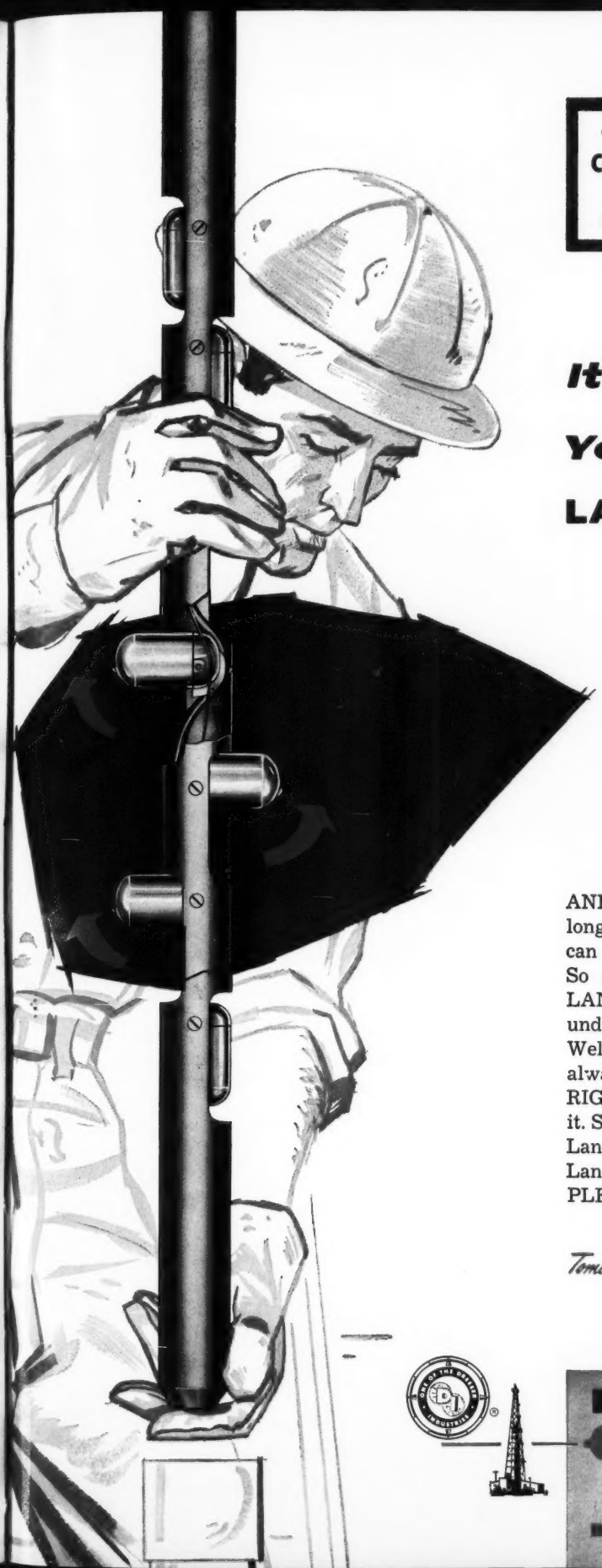

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